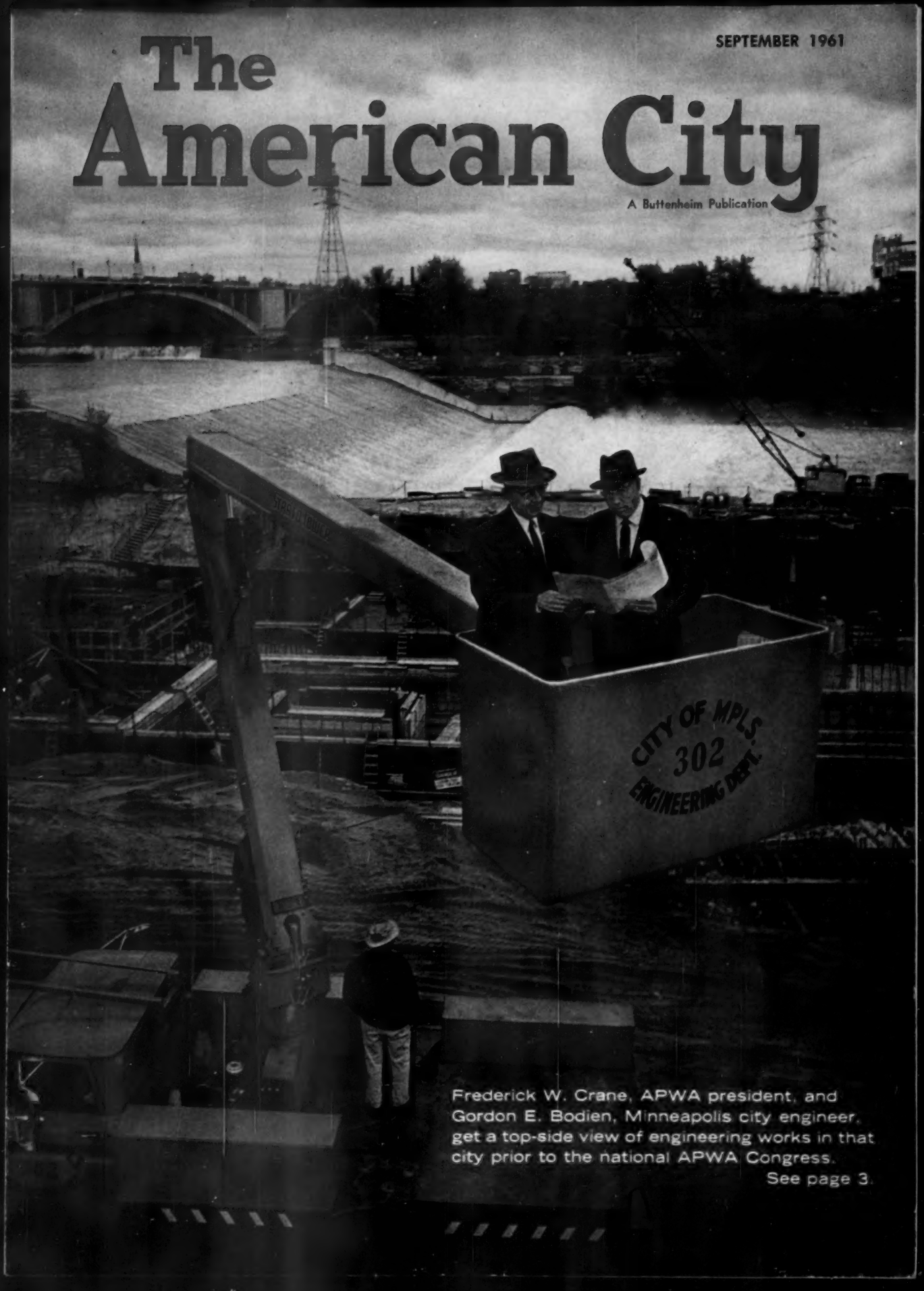
SEPTEMBER 1961

The American City

A Buttenheim Publication



Frederick W. Crane, APWA president, and Gordon E. Bodien, Minneapolis city engineer, get a top-side view of engineering works in that city prior to the national APWA Congress.

See page 3.

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SEPTEMBER 1961

The American City

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MAGAZINE OF MUNICIPAL MANAGEMENT AND ENGINEERING

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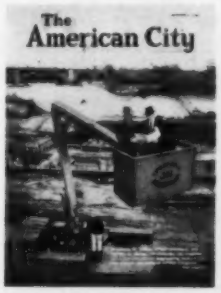

Minneapolis, site of the APWA Congress and Equipment Show September 24-27, shows off its construction for President Frederick W. Crane and Local Chairman Gordon E. Bodien. Here, they inspect the Upper Harbor Project which consists of three new locks to raise barges a total of 50 feet at St. Anthony Falls on the Mississippi River.

Mr. Crane, President of the American Public Works Association, is General Manager of the Buffalo, N. Y., Sewer Authority. Mr. Bodien is the city engineer of Minneapolis.

This issue (page 89) includes an article, co-authored by Mr. Bodien, which describes the unusual comprehensive equipment division of the Engineering Department. This division buys, owns and maintains virtually all of the city's vehicles and equipment, renting them to the various departments at sensible rates which provide for adequate replacement. Another article (page 143) outlines the host city's street-lighting system.

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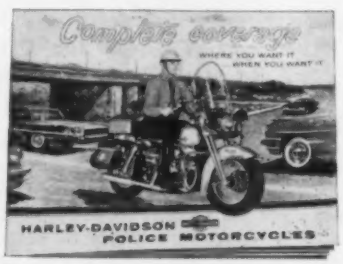

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Volume 76 Number 9

The American City

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ASSOCIATED PUBLICATIONS

CONTRACTORS and ENGINEERS	OVERVIEW	
Municipal Index	MART	AMERICAN SCHOOL AND UNIVERSITY

FEATURED THIS MONTH

New York City's Mobile Snow Melter

. . . promises the first major breakthrough in the costly and difficult task of hauling snow off the city streets. Engineer Casimir A. Rogus discusses the background, analyzes the various methods of snow melting, and then gives details about the mobile melter that proved itself this summer on windrows of cracked ice carefully mixed with tin cans and other "typical" street debris. See page **98**

Minneapolis' Equipment Rental Division

. . . should attract more than its share of attention at the APWA Congress being held in that city this month. It keynotes an increasing trend among modern municipal administrators—of assigning all equipment to one department and then "renting" this equipment to the various service departments. The method commits the city to an organized, financially sound program of good maintenance and equipment replacement. City Engineer Gordon Bodien gives complete story of how the method operates in Minneapolis and cites typical rental charges. See page **89**

To Resurface Aging Concrete Streets

. . . economically, Sioux City, Iowa, has developed a method that Public Service Director Bill McElwee thinks is better than slurry seal. He gives the details, compares costs, and tells why he likes the new method. See page **107**

The Kansas Digester

. . . is the resourceful contribution of this independent-thinking midwestern state to the science of sewage purification. Consulting Engineer Robert E. Crawford tells how Salina built its new sewage purification plant and incorporated these practical and efficient units in it. See page **116**

The Nation's Most Dynamic City Plan

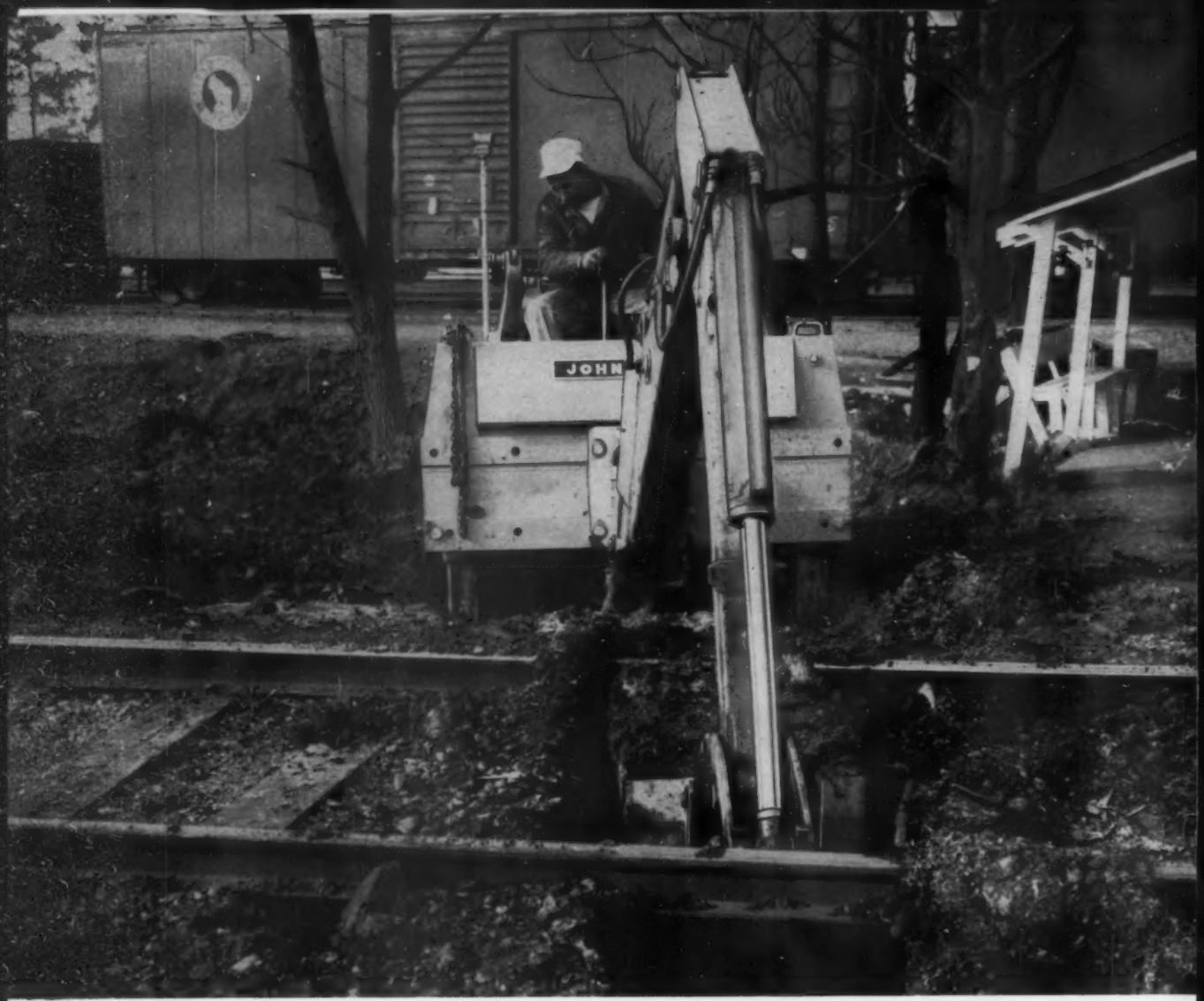
. . . that, in its 44 years of existence, has paved the way to dramatic improvements to its city, sets its sights for new goals. Chicago's Burnham Plan has been a classic in city-planning circles since city planning started its upward, ambitious climb to independent professional status. Commissioner Ira J. Bach analyses what the updated plan will bring. See page **102**

In Addition

. . . learn how Cincinnati's **Purchasing Agent John G. Krieg** buys value for his city without being hypnotized by low price (although he sees that the price is good)—p. 185. See how **Modesto, Calif.**, gets the public solidly on its side with good aggressive citizens' committees—p. 147. Get a facts-of-life viewpoint on the role of autos in our urban society, a refreshing change from the mournful dirge that many urban prophets of gloom are singing—p. 133. Get the advice of veteran forester **Harry E. Turner, East Orange, N. J.**, who tells what he wants in stump cutters—p. 179. See how the little city of **Houma, La.**, continues to cut its local-government expenses by earnings from its municipal electric plant—p. 157. And then take a look at **Santa Monica's** municipal auditorium where Hollywood went to award its coveted Oscars to moviedom's top performers—p. 97.

Next Month—

. . . watch for the first of a new series on **sewer service charges,** based on a nationwide survey conducted by the editors of this magazine. The series will discuss the elements of these charges and give examples of their use. Learn also how one city reduced its water-treatment costs by adopting **high-rate filtration**. Review and think over **"Bankrupt Principles of Urban Growth"** outlined by one of the nation's leading city planners. And then look over the clever way that City Engineer Charles Stacy, McPherson, Kans., finds **sewer leaks** by using a smoke bomb.



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John Deere Backhoe combinations are now offered with the 40 engine h.p. "1010" Crawler or Wheel Tractor, the 50 engine h.p. "2010" Wheel Tractor, and the "3010" Wheel with 64 engine h.p. (gasoline) or 69 engine h.p. (Diesel).

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LOADERS

BULLDOZERS

BACKHOES

AND

CONSTRUCTION

EQUIPMENT

Versatility and Resourcefulness Are the Keys

There will be a significant meeting this month in Minneapolis. Municipal engineers and others charged with the responsibility of construction and maintenance of their cities will swap ideas at the Congress of the American Public Works Association; and from this we can expect some new, resourceful methods and applications that will add to the usefulness of equipment and processes that cities employ to provide service to their people.

Cities like equipment that can do lots of tasks. They aren't particularly impressed with the specialty units that do one task and then sit in the garage for the rest of the year. Contractors like special-purpose equipment and often wear them out on a single job. Cities like versatility and they want their equipment to last.

We see front-end loaders used to pick up street debris, to load snow, to help lower pipe into a ditch, and even to serve as a temporary platform to change lamps in a street light.

We see snow blowers used to pick up leaves in the fall. We observe street sweepers picking up excess aggregate from a street that has just been resurfaced with asphalt.

We have watched these alert and persistent municipal engineers push manufacturers into unusual alliances—such as the cooperative design of a street sweeper with a detachable hopper made by one company so that a truck with hoisting arms made by another can pick up the hopper and haul it away. They also have stimulated use of the large portable refuse containers made by one manufacturer, used with refuse trucks having oversize bodies produced by another to simplify refuse collection in difficult areas.

One little city built itself a park-utility truck able to perform service for the department of streets, sewers, fire and police when needed. Many small cities now have motor graders with bulldozer blades on one end and a backhoe on the other. The practice of equipping trucks with front-end loaders and having the truck driver load, haul, and unload, has become almost commonplace.

Much of today's equipment and many of the most effective processes came into being originally in the shops and laboratories of our cities. The leaf loader is a notable example. We are not sure who developed the first one but we were there in 1944 when the late J. Mercer Graddy, director of public works, Columbus, Ga., assembled one using a cotton-gin blower, and christened it a "Leaf Sucker Upper." Unfortunately we had a determined young proofreader who was "sure" that we meant, Columbus, *Ohio*, and changed our copy reporting this new unit without bothering to check. A week after we published the story, we had an annoyed letter from the Director of Public Works in Columbus, Ohio, saying that his city had no such unit, and that his name wasn't Graddy and that he wished that people would quit writing him about some leaf-sucking machine. A few days later we received a humorous little letter from the city manager of Columbus, Georgia, stating that it was bad enough to have those Yankees "steal" his leaf machine but it was too much to have them take his director of public works also.

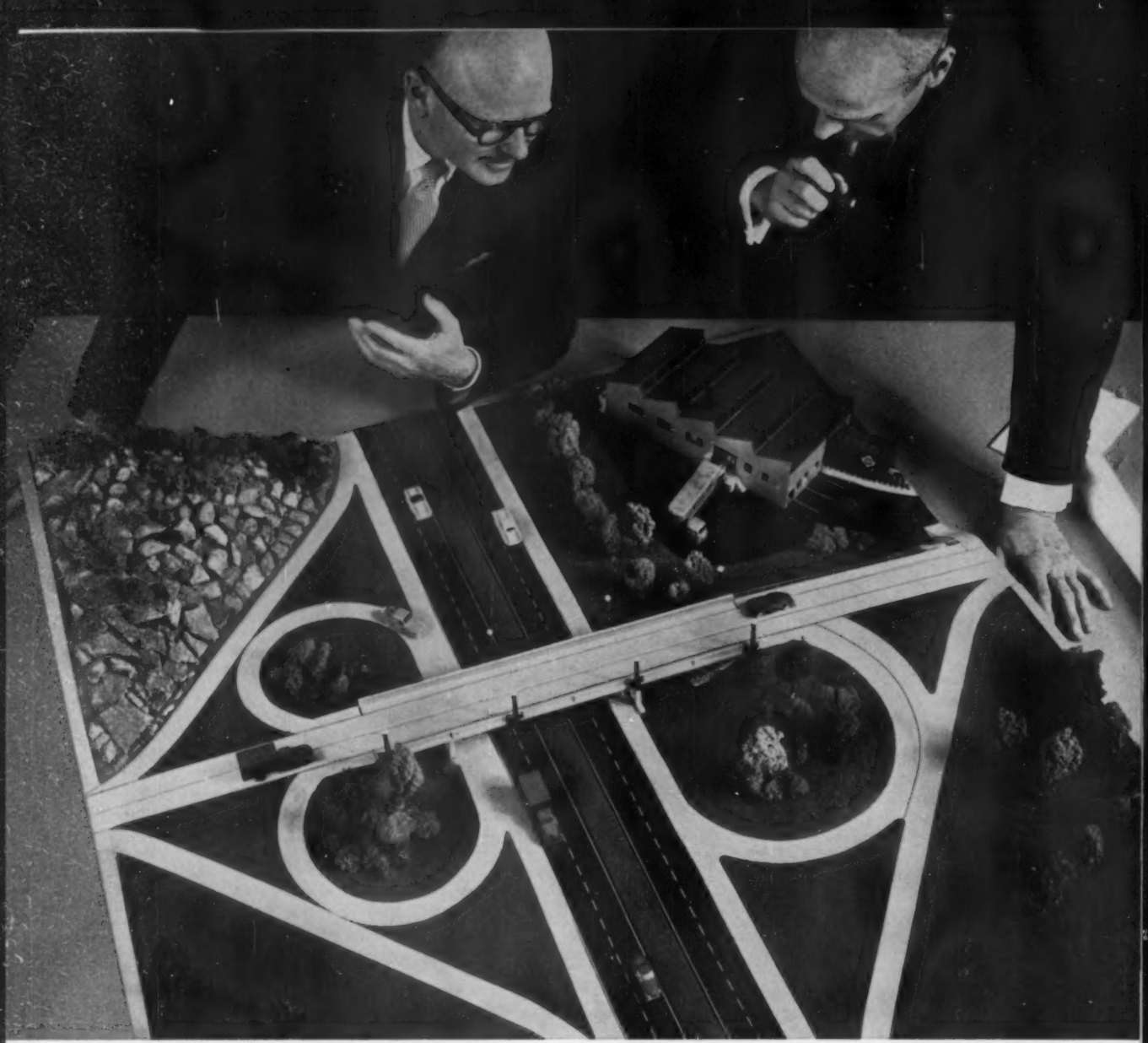
In Anderson, Ind., a number of years ago, a water superintendent became annoyed with the way he had to determine chlorine residuals and out of this came the now classic Laux flash test. Over in Springfield, Ill., the superintendent of water decided that he could develop more effective water-treatment processes and from this came the now well-known Spaulding Precipitator. A sewer superintendent in Long Beach, Calif., discovered that if he passed a beach ball through a flowing sewer, he could scour it clean. Now we see rubber balls, especially toughened, manufactured for this service.

One of the persistent hard-to-document stories has it that most of our modern sewer-cleaning equipment stems from an unidentified Florida sewer-maintenance man who captured an alligator, tied a rope around his neck, a bucket to the rope, and headed the 'gator into the sewer.

As we all know, New Orleans is one of our great cities, a center of culture. Yet it originally was a swamp. New Orleans uses pumps to keep its city habitable; these pumps are the invention of the late A. Baldwin Wood, for many years chief engineer of the Sewerage and Water Board, and were manufactured originally in the city shops.

Having the privilege of reporting constructive and resourceful action like this is one of the extra dividends that we get from serving the vigorous, active municipal-government field.

The men who gather this month in Minneapolis at the Congress of the American Public Works Association undoubtedly will talk about and develop more resourceful methods of performing their municipal services. But they have an opportunity for a meeting like this only once a year. We have the opportunity to present this good-idea material each month throughout the entire year.



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OUR MUNICIPAL NOTEBOOK

ILLEGAL DOWNSPOUTS?

Do roof downspouts, illegally attached to your sewer system, cause it to overflow after every storm? Versailles, Ohio, has a foolproof method of detecting them using an insecticide fogger. The method follows these steps:

- *plug the inlet and outlet of the upstream manhole.*
- *plug the inlet of the downstream manhole, but provide a plug that permits introduction of the line from the fogger.*
- *start the fogger; in five minutes, fog will begin appearing from soil-pipe vents (legal) or from roof leaders (illegal).*

Versailles uses a Jaeger air compressor, model 75, connected to a spray gun, and 15 feet of hose. The operation to test an entire block

takes about 15 minutes. The connection that introduces the fog into the sewer should be a loose one to prevent buildup of pressure that would break any water seals.

* * *

MECHANICAL EFFICIENCY EXPERT

El Paso, Texas, now has positive proof that equipment such as street sweepers and refuse trucks aren't doing a substantial amount of their work in some remote hamburger shop. Superintendent E. F. Muckelroy has placed Service Recorder instruments on each unit and found efficiencies soaring upward. On the street sweepers alone, daily curb-miles jumped from 20% to 70%.

* * *

SEWAGE-PLANT HOUSECLEANING

. . . is a lot easier if the operators have the advantage of steam-cleaning equipment. In the Toledo, Ohio, plant, the operators use steam to clean suction wells, screens, screen-room floors, and pneumatic ejector hoppers in the pumping room. They also use it to remove grease and grime from the scum ejectors, grit storage tanks, and truck-loading areas under the tanks, and even the trucks themselves. Occasionally they use the steam to open grease-clogged sewers, to prepare the effluent tunnel for repainting and for many similar jobs. The unit they use is a Champion Hypressure Jenny able to produce 180 gallons of boiling hot spray per hour.

* * *

NEW STREET BROOMS QUICKLY

San Diego, Calif., can make the main broom of its big street sweepers in 40 minutes, a job that formerly required 2½ hours. To produce this labor savings, Equipment Superintendent L. E. McCorison uses a Cor-a-matic broom-winding machine. His division makes some 700 brooms per year. He finds that the brooms, wound speedily, actually are better, because of more even filling and better balance.

* * *

POLICE-FIREMEN

. . . or public-safety men have been attracting more than their share of attention in recent years. Apparently, they are most suitable to the smaller municipality, of less than 25,000, where specialization is more difficult. However, this includes over two-thirds of the municipal fire, police and public-safety departments. Oak Park, Mich., (pop. 37,000), has such a combined fire and police department that places the "fire department as close to the resident's home as the nearest patrol car." Director G. S. Lenord has found that he would need six more firemen if he were to operate a conventional department and get the same company-manning credit from the National Bureau of Fire Underwriters.

If you want more information on these topics, or any other municipal problems, drop a note to

The Editors
THE AMERICAN CITY
470 Park Avenue South
New York 16, New York

FOR A GOOD MARINA

. . . if possible, locate it near a residential or park area. Pleasure boaters like it separated from docks that serve commercial fishing or charter boats. Boaters don't seem particularly worried about size. One in Long Beach will accommodate nearly 2,000 boats; one in New Rochelle will receive only 30. However be sure to provide parking space. You should have at least one parking stall for each boat.

Marinas are valuable civic assets, the American Society of Planning Officials finds. They preserve the shore line for public recreation, reclaim certain otherwise waste land, and bring in a certain amount of revenue to the municipality.

* * *

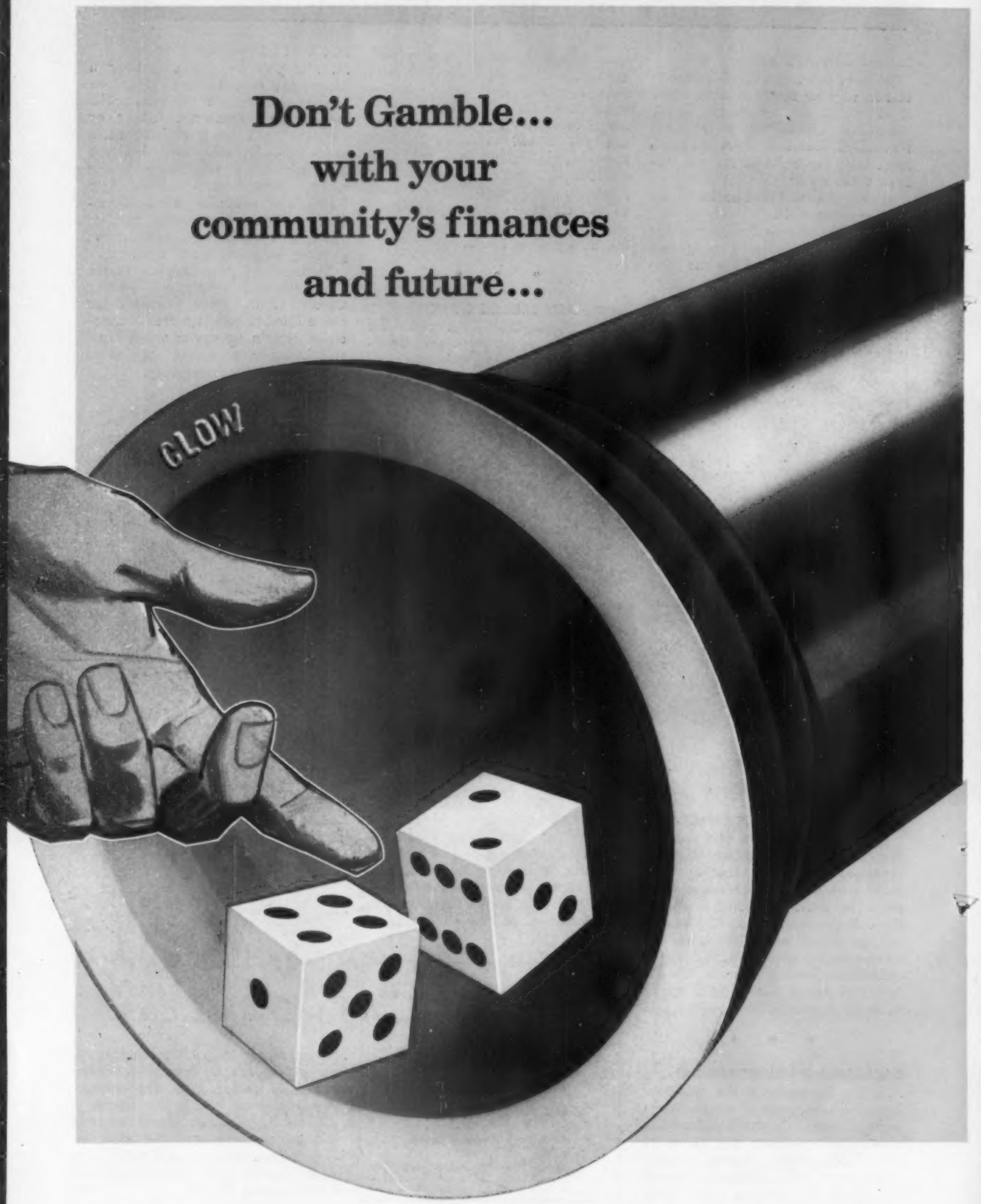
GROUND GARBAGE CLOG SEWERS?

Not in Jaspar, Ind., a city that should know. In this city, virtually every house has a General Electric food-waste grinder in the kitchen sink, and Superintendent Edward T. Seng finds that the sewers are cleaner than they ever were previously.

However, the ground garbage has boosted the air requirements for the activated-sludge type of sewage purification used here. The original

design anticipated 1.4 cubic feet of air per gallon of sewage purified. For good performance, the sewage requires about double this figure.

Over the past ten years, the raw sewage has averaged 300 ppm in both suspended solids and BOD. The plant purification process reduces both to about 95 ppm. ◄◄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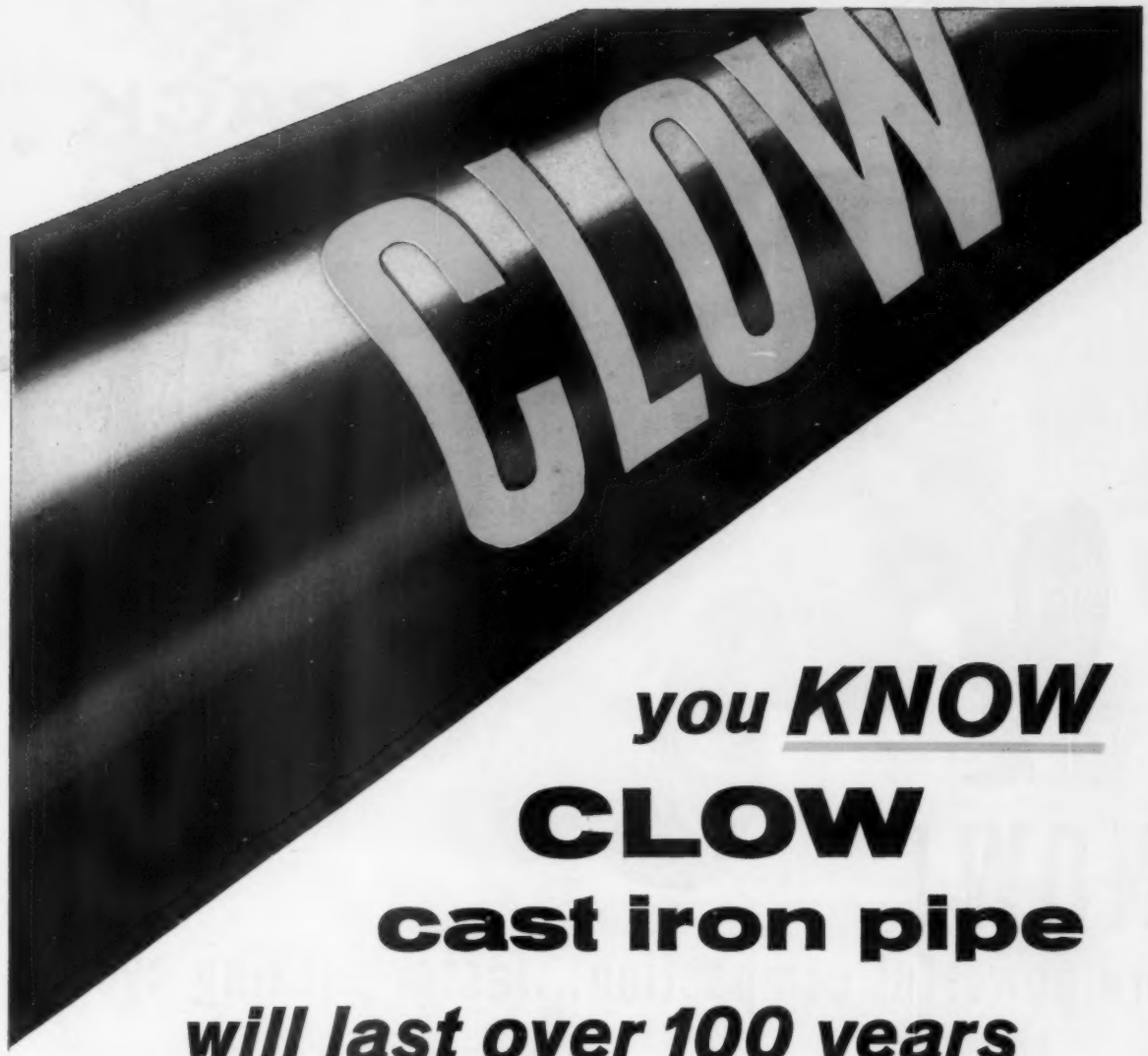

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In addition, you get real cost advantages. The PACK-KING is priced competitively with old-style side loading bodies — way below rear-loading hydraulic units. Because of clean, simple design, maintenance costs are cut to the bone.

The new M-B PACK-KING has been under development for two years, and has been thoroughly tested on typical routes to give you more profitable performance right *now!* Available in capacities of 14, 16, 20, and 24 cu. yds., the PACK-KING can be mounted on economical shorter wheelbase, shorter cab-to-axle, and lower G. V. W. trucks — is fully adaptable to "containerized" collection. Now study the detailed features at the right, then mail the coupon *today* for additional information.

. . the powerful packer with more payload!

Greatest Packing Pressure; High Density Compaction Tremendous packing pressure of 10 lbs. per sq. inch of packer plate — higher than any other side-loading unit — due to high volume pump, big bore, short stroke cylinders. Refuse is lifted with a curved, king-size "Load-Hoist" plate, then rammed into the body by the powerful "PAK-TITE" packer plate. Because the packing area is located at the top of the body, material circulates throughout the interior, eliminating any voids, and assuring high density compaction, from top to bottom, front to rear.

No Annoying "Fall-Back" When Loading or Packing The huge loading area is always free of material after a packing cycle . . . from the first load to the last . . . because the "PAK-TITE" packer plate acts as a retainer, holding compressed refuse in the body. Since there is no "traveling-bulkhead" type packing plate, there is no re-packing of the load on every cycle. Compression of the load remains constant, without material fall-back resisting packing pressure.

Faster Packing Cycle; More Blocks Covered Each Day The elimination of a plate traveling the length of the body and returning means a faster cycle. A high volume hydraulic pump and short stroke, big bore cylinders also contribute to cycle speed, keeping crews working — not waiting.

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Sturdy, "Rock Body" Construction Built to "take it" for years of rugged use, the PACK-KING body is unitized for permanent rigidity. Heavy steel members surround the body, with special reinforcing at the loading area. There's no possibility of the roof or sides bulging from packing pressure.

Complete Safety . . . For Crew and Bystanders No heavy tailgate to raise and endanger personnel. Loading doors on both sides permit curb-side loading from either side of the street. Crew members are always within sight of the truck driver. Doors must be kept closed when packing, or mechanism will not operate.

Plus Many More Important Advantages for More Profitable, Efficient Refuse Collection.

FASTER,
SAFER DUMPING

The PACK-KING has *twin* telescopic hoists mounted *outside* the truck chassis frame. This outboard mounting provides solid 4-point support while dumping, insuring better overall balance, especially on uneven terrain. Locating the packing mechanism at the front of the body also contributes to the safe balance. There is absolutely no danger of "up-ending" the truck, because there is no heavy, unwieldy tailgate to raise prior to dumping. A 4" taper from front to back within the body allows the load to slide out easily. The large rear safety doors are easily unlatched from the side, keeping personnel clear of the load.

SEE THE PACK-KING AT THE A.P.W.A. SHOW...BOOTH C•33•34•35

QUALITY MUNICIPAL AND INDUSTRIAL EQUIPMENT SINCE 1907

M-B CORPORATION
NEW HOLSTEIN, WIS.

LINE MARKERS
SWEEPERS REFUSE BODIES

M-B Corporation
1615-9 Wisconsin Avenue
New Holstein, Wis.

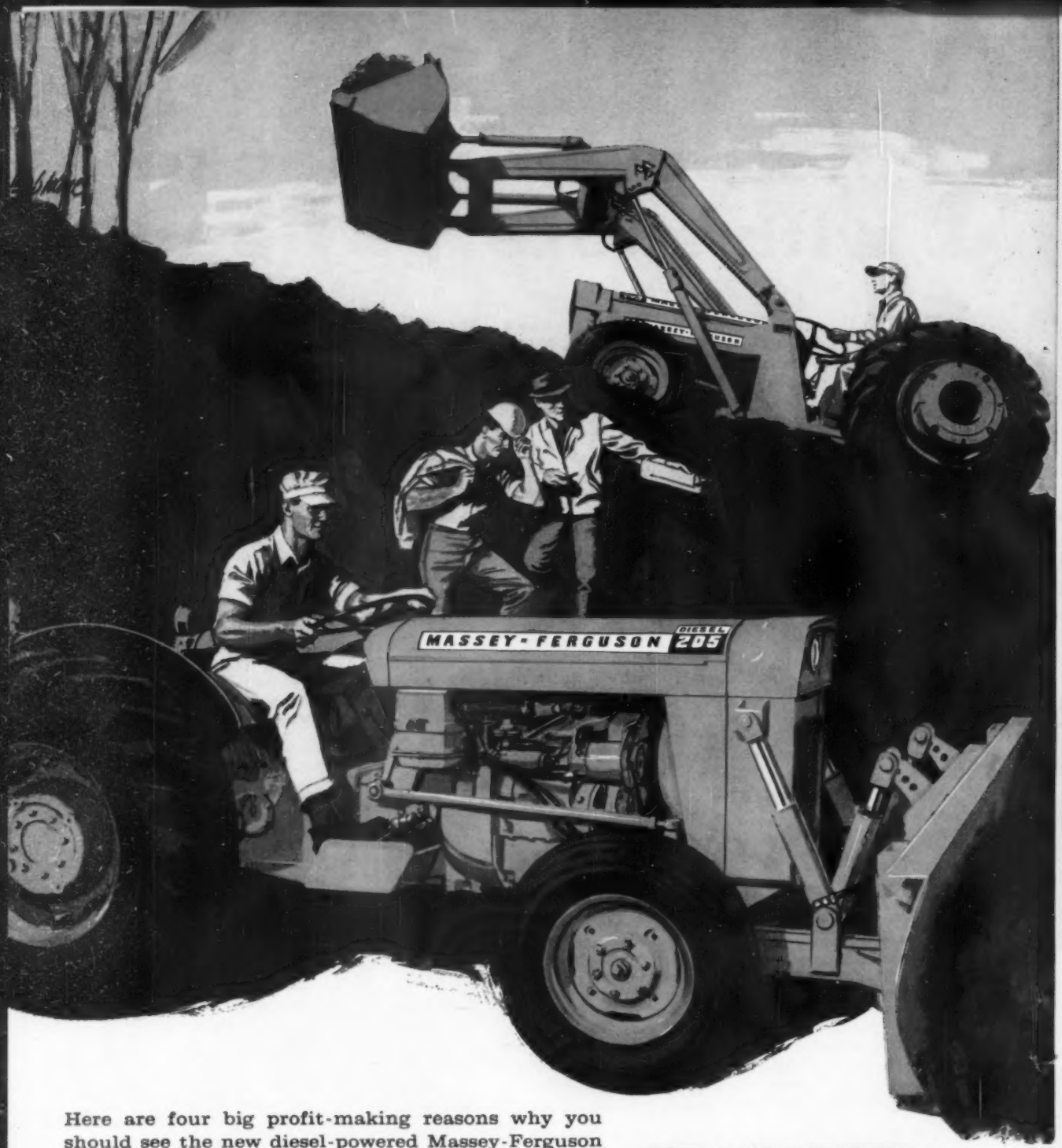
Send PACK-KING details and name of nearest dealer:

Name _____

Company _____

Address _____

City _____ Zone _____ State _____

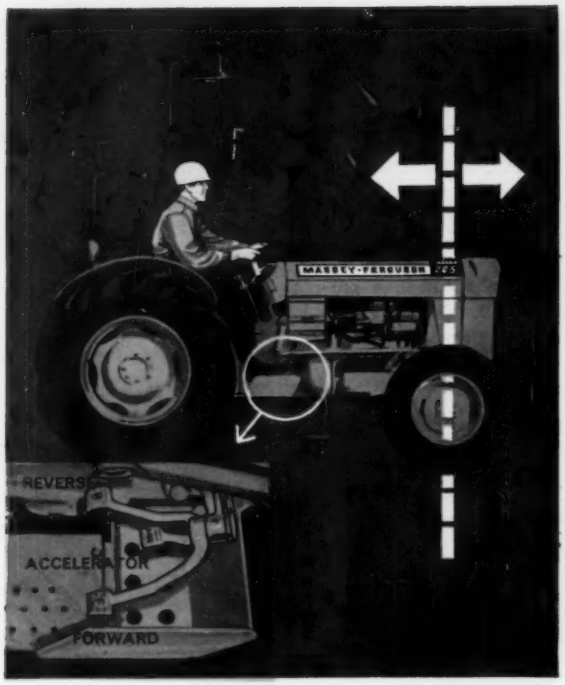


Here are four big profit-making reasons why you should see the new diesel-powered Massey-Ferguson 203 and 205 Industrial Tractors. The first is power. Diesel power that's smooth—even at peak loads. Second is economy. These tractors with their matched equipment do more work per gallon of fuel than any other gas or diesel in their class. Third: They're more versatile . . . taking a multiple of power-matched attachments. Fourth: maneuverability is unequalled. Instant Reverse and Differential Lock (see opposite page) make the difference. So for power, economy, versatility, maneuverability—make the money-saving choice . . . buy a new M-F diesel-powered 203 or 205 rig!

MASSEY FERGUSON INDUSTRIAL EQUIPMENT

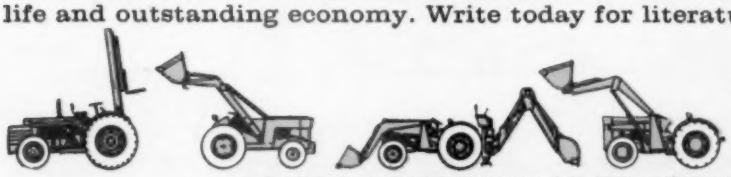
NEW! Two Diesels Engineered To Speed All Jobs!

Differential Lock Exclusive on the MF 203. Can you stop wheel spin on ice, snow, mud and wet grass? You bet you can! With Massey-Ferguson's new spin-stopping Differential Lock. Here's how: By eliminating the action of the differential, and causing both wheels to turn as if they were fastened to a single axle, you get off slick spots quickly—without costly time delays. You're always working—no matter what the conditions—thanks to M-F's new Differential Lock!



Instant Reverse Exclusive on the MF 205. Instant Reverse on the diesel-powered MF 205 Tractor eliminates all on-the-go shifting, clutching and pulling of levers. You go forward . . . reverse . . . smoothly, instantly, at the touch of a pedal. You maneuver in crowded work sites quickly. Cycle time between dump and load is fast. The operator stays fresh. You get more done. Make more profit. See more progress all day . . . every day. It's exclusive . . . it's Instant Reverse on the MF 205.

Some other things you'll want to know: Massey-Ferguson's diesel-powered MF 203 and MF 205 tractors are unmatched for rugged design and construction. For instance: Extra heavy-duty cast-steel front axles plus bumper grills are engineered to withstand all the heavy stresses of industrial work. M-F's own diesel engine has high-compression ratio of 17.4 to 1; 152-cu.-in. displacement. Starts easily, even in below-zero weather. Triple filtration plus distributor-type fuel injection insures long life and outstanding economy. Write today for literature.



NEW KIND OF ENGINEERED
DEPENDABILITY PAYS OFF IN PROFITS

Massey-Ferguson Industrial Division
12601 Southfield Road, Detroit 32, Michigan

SEE YOUR NEARBY MASSEY-FERGUSON DEALER TODAY

An important message for Municipal Officials...

WHEN SECONDS COUNT, SPEED HELP WITH NEW BELL ***GROUP ALERTING*** *AND* ***EMERGENCY REPORTING*** *SYSTEMS!*

In a fire, or any emergency, even short delays can cost lives and property. That's why Bell Telephone System research has developed two unique types of communications that save time, get needed men and equipment to the scene—right away.

The GROUP ALERTING AND DISPATCHING SYSTEM was developed especially for communities with volunteer fire departments. With one spin of a headquarter's telephone dial, many volunteers are called simultaneously, receive recorded instructions, are on their way.

The EMERGENCY REPORTING SYSTEM provides instant street to headquarters contact. Headquarters gets quick answers to the vital questions, *what* and *where?* Men and equipment are dispatched immediately, without confusion.

Right now communities throughout the country are adopting these new systems. Here's why . . .

GROUP ALERTING AND DISPATCHING

Alerts volunteers fast. One spin of dispatching telephone dial and men needed are called with distinctive ring on each man's regular telephone at home or at work.

Speeds action. Dispatcher repeats message once, hangs up. His words are recorded, exact message reaches all volunteers. Recording continues five minutes, may be extended.

Reduces cost. Group Alerting service is flexible. Alerts only the men that are needed.

Improves traffic control. Private telephone-alerts mean less traffic congestion. Chances of accidents that can happen when curiosity seekers get in the way of emergency equipment are minimized.

Eliminates capital investment. Service depends largely on existing telephone networks. Equipment provided by Telephone Company. After nominal installation charge, only cost is monthly service charge.

Adapts easily for use by civil defense units, rescue squads and police departments.

Assures you of reliable operation. All equipment installed, maintained and regularly checked by skilled Telephone Company technicians.

For full details, call your nearest Bell Telephone business office. Ask for a Communications Consultant and he will give you the whole story.

EMERGENCY REPORTING SYSTEM

Saves time. Citizen calls control center from nearest street phone, reports exact location, nature of emergency. Phones strategically placed throughout city.

Reduces false alarms. In cities where Emergency Reporting is used, false alarm frequency has dropped significantly.

Cuts waste of manpower and equipment. Nature, extent of emergency known immediately. Duplicate dispatching eliminated, even if several persons report same emergency.

Provides printed records. Calls recorded on automatic equipment that prints time, date, call box number.

Doubles as police call box. Police headquarters reached, bypassing emergency switchboard. Service is flexible, too. Reporting stations, dispatching circuits rearranged fast to meet changing conditions.

Eliminates costly upkeep. Regular Bell System monthly service charge covers all repairs and maintenance.

Assures you of continuing operation. Circuits continuously self-tested. Alarms notify control center of interruption to service. Telephone Company personnel are quickly sent to trace, repair trouble.

BELL TELEPHONE SYSTEM

Visit our exhibits at the Public Works Congress, Minneapolis Municipal Auditorium, September 24-27.

Special report to users of Caterpillar equipment:

CAT CATERPILLAR

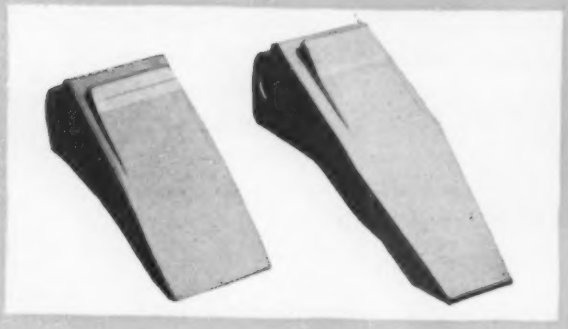
Parts you can trust
...cost less per hour

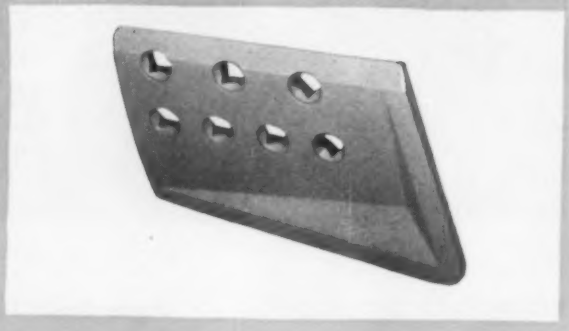
New Cat No. 8 and No. 9 Ripper Tips outproduce other brands 25 to 50% in field tests

That's the kind of news you can use—to cut costs. This newcomer to the Caterpillar line of ground-engaging tools is making a name for itself with cost-conscious users.

They're exceptionally wear-resistant—hardened to Rockwell C50 for longer wear-life under any conditions.

Check the price! Improved Cat Tips sell for about the same *or even less* than other leading brands.





They're available in two new designs. Both the short and long tips shown in the photograph are *self-sharpening* to keep their working edge until replacement. The long tip gives extra wear-life with only a slight reduction in impact strength. Low-cost, weld-on shank adapters are available for *all brands* of shanks. No need to wait—you can put these new Cat Tips on your job immediately.

In field tests the short tip was pitted against two leading brands on rippers working in caliche and cemented conglomerate beds. The Cat Tip outproduced the other brands 25-50%—representing savings of 38-54% in replacement costs.

Outstanding impact strength! One No. 9 Tip, tested in *solid* granite, took 13 smashing blows from another D9 pusher that backed up 10 feet before each charge at the stalled D9 Ripper.

And here's another money-saving newcomer—Cat's new No. 7, No. 8, No. 9 End Bits are redesigned for better digging ability. They self-sharpen as they wear away for continuing like-new performance. They're forged alloy steel and heat treated for outstanding strength and wear-resistance.

Compare other ground-engaging tool brands against the Caterpillar line. Keep machine-hour records and find out for yourself which is the best buy. Those who do, buy Caterpillar.

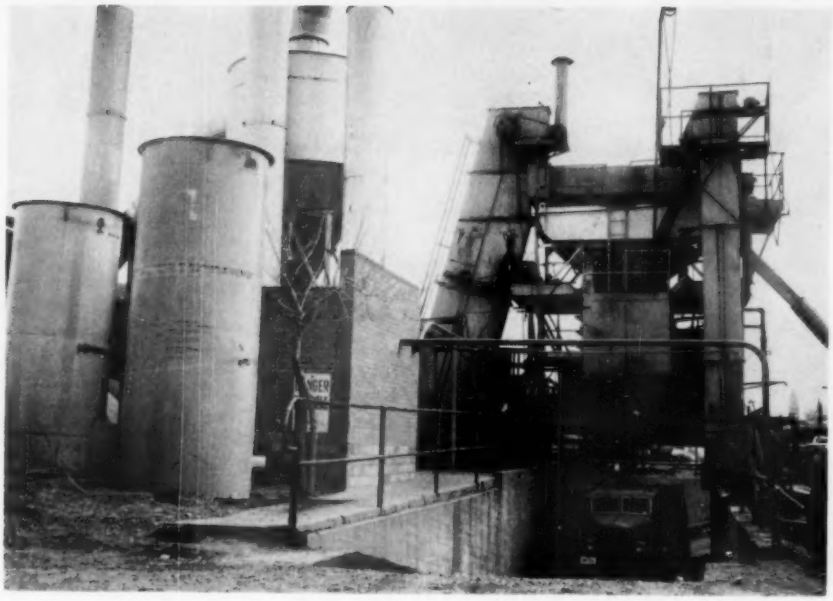
See your Caterpillar Dealer for the best in parts and service.

Caterpillar Tractor Co., General Offices, Peoria, Ill., U.S.A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

Diesel Engines • Tractors • Motor Graders • Earthmoving Equipment



The remodeled hot-mix asphalt plant will deliver quality material in winter or summer.

Denver's Asphalt Program Goes Electric

Denver, Colo., expects to place 100,000 tons of hot-mix asphalt this season using a renovated asphalt plant that has been converted from steam to electric heating and supplied with wet scrubbers to remove dust that causes nuisance. This year's program will cost $3.50 per ton, according to Denver's Public Works Manager Joseph Shoemaker.

The plant that the city owns is a Madsen, rated at 120 tons per hour, first erected in 1946. The renovation, designed and supervised by Richard Switzer, director of equipment, will enable the city to produce and place hot-mix asphalt at any time during the year. With the old steam equipment, the maintenance crews were forced to use cold-patch material in the cold months, and they suffered with consistently bad results because of it.

Storage

The renovation provides 57,000 gallons of storage of both asphalt cement and cutback asphalt. Two tanks, each holding 12,000 gallons, will be reserved for the asphalt cement. One tank of 8,000 gallons will be reserved for MC-O cutback asphalt, used chiefly for priming operations. Another 8,000-gallon tank will hold RC-O cutback used for tack coating; the fifth and sixth, holding 17,000 gallons, will contain RC-4 used for sealing.

Each tank will contain three heating elements, thermostatically controlled to maintain temperatures ranging from 250° to 320° F. The pipes carrying the asphalt are jacketed so that hot oil, which is also heated electrically, can circulate around them and keep the asphalt hot. Two three-inch Kinney positive displacement pumps transfer the asphalt from the storage tanks to the plant. A third pump can transfer asphalt from any one of the six tanks to another.

Five storage tanks will contain various grades of asphalt, electrically heated.

The electric heating system will cost $24,000. However, Mr. Switzer expects the city to recover this cost in two years.

The wet-washer system, a Madsen product, is costing $6,000.

A two-yard Osgood crane with a Caterpillar diesel replacement engine keeps the plant supplied with aggregate.

The city has a program of 110 miles of asphalt resurfacing this year. Of this, 72 miles will consist of hot-mix paving and the balance, seal coating. ◄◄

RUST-OLEUM®

NEW COLOR

HORIZONS System

STOPS RUST AND PROVIDES LASTING BEAUTY

Gone are the days when color was used for the sake of color alone. Today, color is functional—helping to improve morale and increase efficiency—serving to color-code and mark safety areas, etc. The Rust-Oleum New Color Horizons System goes even further. It combines four important factors (1) the ability to stop rust, (2) smart, modern color harmony, (3) the durability to last and last, (4) ease of application that saves time, money, and metal. See how this system can bring lasting beauty to your plant, machinery, equipment, tanks, fences, etc. Your Rust-Oleum Industrial Distributor, with your Rust-Oleum Factory Specialist, will be happy to survey your plant and provide complete recommendations. Prompt delivery is assured from Industrial Distributor stocks in all principal cities of the U.S., Canada, and many countries around the world.

Faced with coating problems like these? Heat resistance, water resistance, chemical resistance, floors, galvanized metal, coatings that will dry in less than thirty minutes? Rust-Oleum, in its various systems, can be your answer. Call your Rust-Oleum Industrial Distributor, or write for the facts.

Apply Rust-Oleum 769 Damp-Proof Red Primer directly over sound, rusted surfaces to STOP RUST and cut maintenance costs

Just scrape and wirebrush to remove rust scale and loose rust—then brush Rust-Oleum 769 Damp-Proof Red Primer right over the remaining rust. Its **specially-processed** fish oil vehicle penetrates rust to bare metal as proved in radioactive tracing studies. You save time and money, as costly surface preparations are usually reduced.

RUST-OLEUM®

See our catalog in Sweet's.

STOPS RUST!®

Distinctive as your own fingerprint.
There are imitations,
but only **one** Rust-Oleum.
Accept no substitute.

PROVED THROUGHOUT INDUSTRY FOR OVER THIRTY-FIVE YEARS

You take the brush! Try a free test sample!

ATTACH TO YOUR LETTERHEAD

RUST-OLEUM CORPORATION
2984 Oakton Street • Evanston, Illinois

At no cost or obligation, please send me:

- ☐ New full-color catalog on New Color Horizons System and specialized Rust-Oleum systems. Including color charts and applications.
- ☐ FREE TEST SAMPLE of Rust-Oleum 769 Damp-Proof Red Primer.
- ☐ Please have your representative contact us to discuss a plant survey.

Eight electronic units intercept insects before they reach the plant.

No More Night Life for Insects

The lights we installed at the sewage-purification plant no longer hold the attraction they once did for insects. Electronic devices now attract all varieties of bugs into their clutches for a fast, sure death.

Located near swampy mangrove growth, the plant operates around the clock. Outdoor fluorescent lights burn all night long at the various tanks and equipment locations to guide the steps of the operators as they make their rounds. Dusk formerly signalled the time for all breeds of flying insects to assemble at the friendly, warm lights.

They congregated in such numbers that the night men complained of inadvertently inhaling them as well as of the annoyance of their bites. Fogging the area dissipated one crop but others hatched out quickly and again plagued the operators within a short time.

The second attempt to determine a solution brought success. A demonstration of a small, portable Gardner device proved it to be more of an attraction than the plant lights. Millions of small bugs swarmed over the unit, crowding one another aside in their eagerness. Within five minutes the equipment shorted out because of the tremendous number of bugs. With a broom we brushed them off, allowing others to take their places. One night's operation proved this to be the machine we needed.

The equipment, made by the Gardner International Corp., Pompano Beach, Fla. contains two components. Black-light fluorescent tubes attract the insects and a current-carrying grid electrocutes them as they fly between the bars and contact the electrodes. Although the current is sufficient to dispose of the insects, the plant operators felt only a mild tingle and no burn when they touched it.

We bought eight of the units for permanent installation at a cost of $2,217. Plant personnel installed them in a short time. We found the units economical to operate; we never switch them off. For three months all units did a brisk insect business. Only after that period did the traffic diminish appreciably.

Mosquitoes, gnats and other night-flying insects now rarely trouble the operators. Subsequent swamp drainage by developers has also contributed to the solution of the problem but we credit these devices for the major share of our freedom from bugs.

F. C. FUNNELL, *Superintendent*
Sewage Treatment Division
Fort Lauderdale, Fla.

Vanilla Overcomes the 10% Odor Problem

From actual experience, we in Lake Worth, Fla., feel that good housekeeping at the sewage lift station eliminates about 90% of all sewage odors. But it's the 10% that causes trouble, especially when the wind is from the right direction and the neighbors are holding a lawn party. We tried the field of masking agents —ozone and inhibitors—and even tried to improve the housekeeping, all to no avail.

Housekeeping included painting the floors. During the painting we noticed the 10% odor nightmare disappeared. Inquiries as to the various ingredients used in the paint (purchased from a local manufacturer) led us to discover that for years paint manufacturers used vanilla abstract as a masking agent.

After convincing our purchasing agent that we were still of sound mind, we bought a quart of vanilla extract (35% alcohol) and proceeded to spray the lift station with a 1-to-20 diluted solution. Now we have a candy kitchen atmosphere and no more 10% odor worries. Try it—and let me know how it works for you.

JOE C. WOOLF, *Superintendent*
Water Treatment and Sewage Disposal
Lake Worth, Fla.

Non-dusting ND-25 unclogs sewer lines fast! It generates heat and agitation immediately when poured into manholes . . . begins to remove and loosen debris on contact. Colored red, ND-25 enables you to test its effectiveness by observing traces of the color in other areas of the sewer system. ND-25 saponifies and emulsifies greases and oils — digests roots, paper and other materials containing a high percentage of cellulose. Packed in convenient 50 lb. metal containers.

See the man from National Chemsearch for the best in municipal chemicals. He's a well-trained specialist backed by one of the finest research staffs in the industry. Write for free brochure on ND-25.

ND-25
SEWER
SOLVENT

NATIONAL CHEMSEARCH CORP.

P. O. Box 10087, Dallas, Texas
Offices in: Los Angeles • St. Louis • New York

THE SEWER SOLVENT WITH RESULTS YOU CAN SEE!

Charge For the Service

Controlling the snow from filling stations and other lots will ease the street burden.

The mayor and council of Berlin, Wis., reflecting public opinion, early this year passed an ordinance which prohibits the owners of large lots from depositing snow on city streets unless they do so under supervision and pay for its removal according to specified charges.

For years, filling-station operators, supermarket managers and others who maintained large open expanses had pushed the fallen snow from their lots onto city streets. There it caused a problem and slowed the snow-removal operations of the Department of Public Works substantially. It resulted, too, in more overtime, a drain on the snow-removal budget.

Possible Solutions

Two solutions were apparent. One was to require these owners to find someone who would remove their snow, a difficult task in a city of less than 5,000 population. The other was to continue the snow removal by city forces with regulation of and a payment for the service. The choice of the second resulted in Ordinance A-18 which the council unanimously passed last January.

These are the provisions of the ordinance:

- **No one shall deposit any snow, leaves or debris from private property onto public property except as covered by the ordinance.**
- **Those wishing the snow-removal service shall apply to the city not later than October 1 of each year and shall sign a contract agreeing to pay for the service.**
- **The Director of Public Works shall measure the area of the property served.**
- **The owner shall pay annually a minimum charge of $10 for each section containing 2,000 square feet or less, plus $2.50 for each increment of 500 square feet over the minimum.**
- **Each owner shall, at his own cost, windrow or pile the snow on his own property where practicable or in the street at the direction and control of the Director of Public Works.**
- **The city will not remove snow not piled or windrowed according to instructions.**

The few weeks' experience with the new provisions at the beginning of this year gave promise of better days ahead with regard to this difficult problem of the past. The League of Wisconsin Municipalities has adopted ours as a model ordinance for its members.

BEN GROTA
City Clerk
Berlin, Wis.

Westmount Will Melt Its Snow

Westmount, Quebec, Canada, a residential suburb entirely surrounded by the City of Montreal, is completing the construction of a huge oil-fired melting pond for snow removal. The largest ever designed, it will have a daily capacity of 10,000 cubic yards.

Another pond of the same capacity is planned for 1962-1963 operations. These two will meet all of Westmount's snow-removal requirements.

Costs

The construction cost of both will be about $235,000. J. R. Daye, the city engineer, estimates that operating costs will total 14 cents per cubic yard but these ponds will solve the problem of severely restricted dumping space.

Previously Westmount cast about half of the average annual snowfall of 110 inches beyond the sidewalks. Snowfighters trucked a substantial amount of the balance to an old pond, with a daily capacity of 7,400 cubic yards. An obsolete steam plant, built in the days when the municipality produced its own electricity, heated the water to melt the snow. The new ponds and equipment will eliminate the city's dependence on this ancient steam unit.

Five burners, generating 60,000,000 BTUs per hour, will maintain the water temperature in the ponds at 45°F. To speed melting, gases will agitate the snow and recovered water will spray it.

Although the estimated operating cost is high, residents' requests for eliminating or substantially reducing the amount of snow blown on the front lawns make the melting method necessary. Sufficient vacant property for disposal is not available and Westmount has no river in which to dispose of the snow. ◄◄

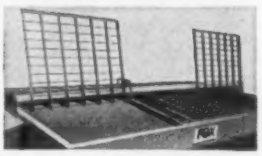
SPECIFICATIONS for your files

FOX Mountable Materials Spreader

for sand • cinders • chips • salt • calcium chloride

MOUNTING

On or off any standard dump body in only 15 minutes. T-head fasteners, cranks and base adjustment channels make this possible. Truck is quickly freed for other work.



LOADING

Sturdy ½" rods make up cover grids that break up lumps. Allow only spreadable material to pass through. Increases spreading efficiency and prevents damage to mechanism.

DASH-MOUNTED CONTROLS

Fingertip control from inside cab makes operation a one-man job. Panel includes—spreader engine ignition and starter switches, volume regulation control and electric clutch switch. Sanding at speeds up to 40 MPH.

FEED AUGER

Heavy-duty feed auger eliminates feed aprons and chains, the source of most frequent breakdowns. Auger mounted on 4 Timken tapered roller bearings, completely shielded from abrasives.

SPINNER

Adjustable for 8 to 40 foot spreading widths. Works close to ground—spreads under parked and passing cars . . . ahead and beneath rear truck wheels for added traction.

GENERAL SPECIFICATIONS

Model	Box Length	Box Width	Weight Empty	Capacity Heaped* (yards)
8S57	8′	80″	2435	5
9S57	9′	80″	2610	5¾
10S57	10′	80″	2849	6½
12S57	12′	80″	3156	8

*4", 6" and 12" height additions to box increases capacity—up to 12 cu. yds. on Model 12S57.

ENGINE —Wisconsin air-cooled, 18 H.P. @ 3500 r.p.m. with starter, generator and enclosed drive reduction.

BODY —10 gauge prime steel. All welded construction with reinforcing ribs.

BEARINGS —10 Timken tapered roller bearings and two sealed ball bearings plus engine bearings.

AUGER —Mounted in two pillow blocks outside of the box, each with two Timken Bearings, fully shielded, mounted on a sleeve with an internal spline.

CONTROLS —Manual controls outside driver's window, standard. Optional electric remote control panel on truck dash.

SPINNER —18" diameter. Height adjustable by 4 position lever for 8 to 40′ spread.

MOUNTING —Quickly attached without drilling holes or welding.

GRIDS —½" rods on 3" centers. 4′ and 5′ sections.

SPECIAL USES —Ideal as Seal-coater for summer road work. Special attachment converts unit to a Trench Filler.

The Fox Materials Spreader will cut your labor, time and equipment expenses to the bone. A catalog . . . case history reports . . . even a no-obligation demonstration are yours for the asking. *Write, call or wire collect for the name of the nearest Fox distributor, who will gladly give you a demonstration.*

FOX RIVER TRACTOR COMPANY
Road Machinery Division
1020 N. Rankin St. • Appleton, Wisconsin
Phone—REgent 4-1451

in Badger's *Easy-Read** sealed register

Look into the workings of this Badger Easy-Read magnetic drive meter. Its instrument gearing is smaller, lighter in weight, lower in friction than ever before possible.

Neither water leakage nor corrosion makes demands on the mechanism. Magnets rotate on ball bearings, so the gearing turns freely with practically no resistance. With friction reduced, Badger Easy-Read can maintain accuracy far longer. Ask your Badger representative to give you a demonstration of the new Badger Easy-Read magnetic drive meter.

*Trademark

The new Easy-Read can be ordered in split-case (⅝" thru 2") or frostproof models (⅝" thru 1" x 1½").

Badger Meter Mfg. Company

4545 West Brown Deer Road • Milwaukee 23, Wisconsin

Letters To the Editor

Zoning

I enjoyed your discussion of the Supreme Court Case of Joseph vs. Town Board of Clarkstown, (Zoning and Planning Decisions, p. 165, April 1961). The problem in Clarkstown is similar to that of many of our suburban municipalities in Montgomery County. For the guidance of officials in our area, I would like copies of your article.

HOWARD J. GROSSMAN
Principal Planner
Montgomery County
Planning Commission
Norristown, Pa.

Sanitary-Fill Survey

Your survey on "The Sanitary Fill Method of Refuse Disposal" has just come to my attention and I have found it a very comprehensive coverage of the subject. (THE AMERICAN CITY, February, March, April, 1961.)

I would like to take this opportunity to compliment you on your promotion of this effective and efficient method of refuse disposal.

P. A. SPOEHR
Supervisor, Tractor Shovel Sales
Construction Machinery Division
Allis-Chalmers Manufacturing Co.
Milwaukee, Wis.

EDITOR'S NOTE: THE AMERICAN CITY has reprinted this three-installment survey, together with significant supporting articles in the form of a 48-page booklet available at a price of $1 each, prepaid.

Can You Use A Deactivated Military Base?

Cities with nearby military bases contributing to their economic support can expect to see some of these installations go out of existence, warned Elvis J. Stahr, Jr., Secretary of the Army, before the U. S. Conference of Mayors recently held in Washington. Modern weapons, with their increased range and power, do not require as many bases.

These vacated properties, however, will release land and building structures for industrial parks, warehousing, educational and other facilities. The department is anxious to make the facilities available to local communities, he explained, and would like to hear of the requirements that any such community would have for them. ◄◄

who framed this engineer?

He was Sanitary Engineer working on the construction of an Air Force base in Texas*. He's a good engineer—asked for the right kind of sanitary sewer pipe. But the regulations read "lowest bidder," so he got a substitute that he didn't want.

Six years later the substitute pipeline had to be dug up, at tremendous expense to the taxpayer. Everybody forgot by that time that the framed engineer had screamed for the right pipe in the first place.

Before the war, only Lifetime Vitrified Clay Pipe was used in sanitary sewers on Federal projects. During the war, the Clay Pipe people couldn't keep up with the sudden, unprecedented demand, so standards were lowered to allow substitutes.

There's no Clay Pipe shortage now, and there's still no real substitute for Lifetime Vitrified Clay.

But outmoded Federal, State and Municipal regulations haven't been changed. They can mean many more framed engineers.

And taxpayers are forced to spend millions of dollars each year to replace sewer lines that should have been installed with lifetime pipe—Vitrified Clay Pipe with new cost-cutting factory-made compression joints—in the first place.

Name of Air Force base on request.

COMPRESSION SEALED, VITRIFIED
CLAY PIPE
THE STANDARD in SANITARY SEWERS
IMPERVIOUS

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1028 Connecticut Avenue, N.W.
Washington 6, D. C.

NATIONAL CLAY PIPE MANUFACTURERS, INC.
1028 Connecticut Ave., Washington, D. C.

Please send me full details on the new factory-made compression joints on Clay Pipe.

(name)

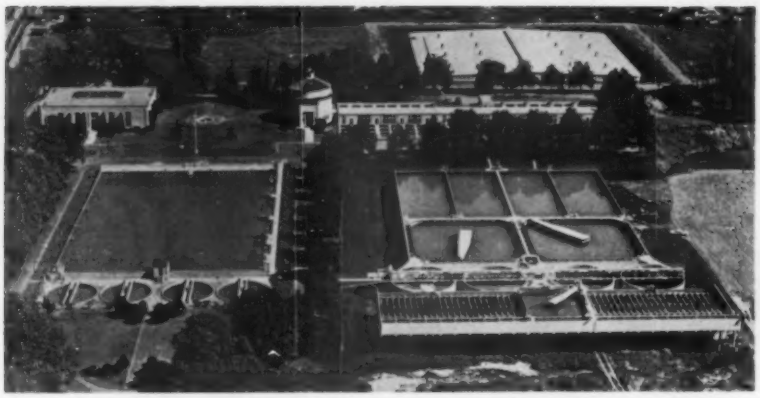
(company)

(street address)

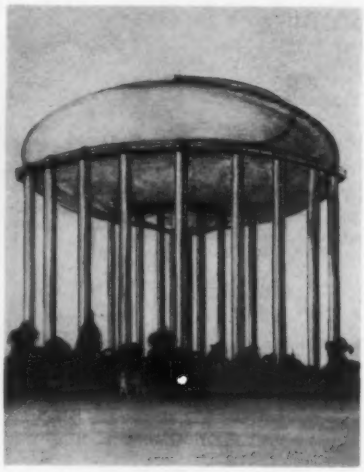
(city and state)

8-7C23 AC

Largest Elevated Tank



The existing Sacramento River filtration plant pumped 35% in excess of its rated capacity of 64 mgd on July 10, 1960.



Sacramento's 3,000,000-gallon tank set a new record in the U. S.

We believe that our new 3,000,000-gallon tank, completed in April, is the largest elevated steel water tank in the nation. The top of the 50-foot-deep spheroidal section currently being erected by the Chicago Bridge & Iron Co., will tower 130 feet above the ground. Its diameter will also be 130 feet.

Big tanks are nothing new for Sacramento, the city which has the oldest municipally operated water system in the West. In 1937 and 1938, the city constructed three 3,000,000-gallon reinforced-concrete water tanks which were at the time the largest ones in the world.

We need large tanks. A city charter provision which prohibits the use of meters on the domestic water supply and the warm climate's thirsty summers contribute to the excessive seasonal use which sometimes reaches 500 gallons per capita per day. Our rates are only a fraction of those charged by other large California cities with a filtered water supply. The monthly bill for a six-room home is now $2.75.

The value of the water system is now $30,000,000. In the next four years we will spend an additional $25,000,000 to improve and expand the entire system. The proposed 60-mgd American River Filtration Plant will consume 40% of the bond-issue funds. Other proposed improvements include an additional 16-mgd treatment plant in another location, 40 miles of new water mains, the large elevated tank and a telemetering system.

The second phase of the improvements will span the period from 1965 to 2030 and will cost an estimated $100,000,000. Plant expansions will form the bulk of these improvements, including an eventual capacity of 330 mgd for the 60-mgd American River Plant.

Presently, Sacramento's citizens use 100 mgd on peak days. The city has water rights to take 225 second-feet from the Sacramento River and 675 second-feet from the American River. These total almost 600 mgd and assure the city an adequate supply for many years in the future. Both rivers have major reservoirs to guarantee adequate water during the dry summers.

Future plans anticipate capping the poorer wells now in use and placing the balance on standby. The goal is to serve the softer, filtered river water to all residents. Wells now supply 20% of the city. The new elevated tank will receive water from these wells until the Riverside Treatment Plant begins operating late next year.

RAY W. JONES
Superintendent of Water and Sewers

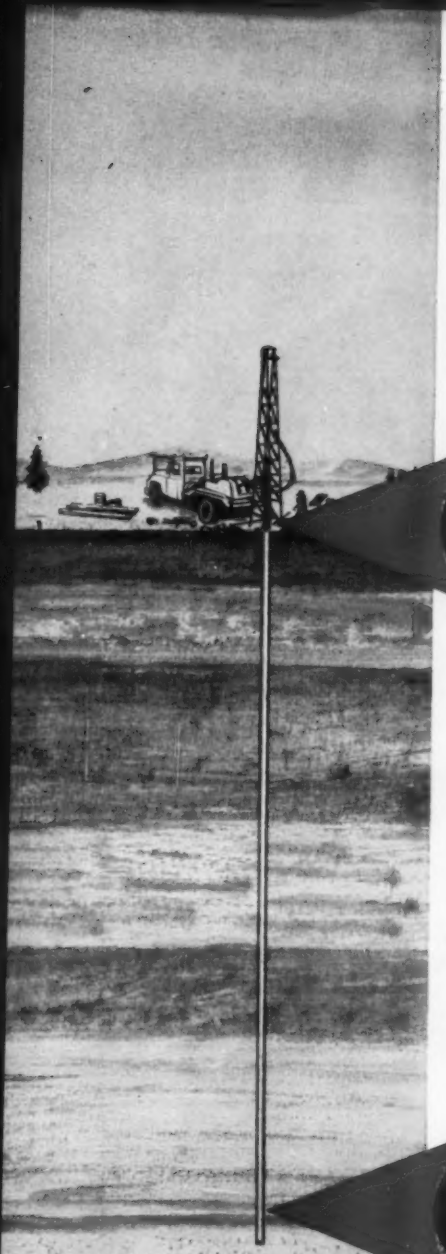
How to Get Support for Water-Works Expansion

An expanded community-relations portfolio offers water-utility executives, public officials, newspaper editors and civic leaders practical ideas toward winning support for any water-utility improvement program. Sponsored by the Cast Iron Pipe Research Association, the portfolio provides a checklist of ways to gain better public understanding and is divided into the following categories:

- **How to win cooperation of newspapers and other means of communication.**
- **How to organize active public support.**
- **How to work with community organizations.**
- **How to make your employees enthusiastic supporters.**
- **How to adapt and use business-promotion techniques.**

Material in the portfolio includes suggested speeches, news releases, letters to the editor, and a list of six films on the subject of water. The basic portfolio, which became available in 1959, will be augmented in 1961 by 31 pieces of material for use as integral parts of complete campaigns or as portions to bolster preconceived plans.

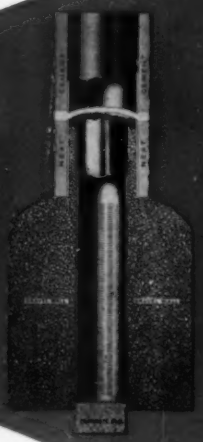
Water-utility executives, public officials, civic leaders and editors may obtain the community-relations portfolio by writing to Thomas F. Wolfe, Cast Iron Pipe Research Association, 3440 Prudential Plaza, Chicago 1, Ill. ◄◄



Layne
SINCE 1882

has the only complete service that means Water

Layne Vertical Turbine Pumps are designed, engineered and manufactured by Layne in Memphis, Tennessee and nowhere else. Because pumping needs vary, there is a Layne pump for every pumping requirement—from 30 to 100,000 G.P.M. in sizes from 4 to 42 inches. Layne Pumps include Deep Well and Short Coupled (oil or water lubricated), Propeller, Mixed Flow, Regular and "In-Line" Submersible. For additional information write for bulletins 200-oil lubricated or 201-water lubricated.



The Layne Gravel Wall Well is an example of Layne experience, engineering and research. This gravel packing and 134 shutter screen employment affords larger screen openings, reduced friction, reduced draw down and pumping head. It increases specific capacity and makes for more effective retention of native sands. For additional information write for bulletin 900.

From top to bottom, you can depend on Layne for the most complete water service in the industry. This complete service provides undivided responsibility for the delivery of water . . . of the quality and in the quantity required. Over 75 years of *growing* service gives the skill and technical know-how which makes Layne First in the field of water. For additional information write for bulletin 10.

LAYNE OFFERS COMPLETE WATER SERVICE:

Initial Surveys • explorations • recommendations • site selection • foundation and soil-sampling • well drilling • well casing and screen • pump design, manufacture and installation • construction of water systems • maintenance and service • chemical treatment of water wells • water treatment—all backed by Layne Research.

Layne services do not replace, but coordinate with the services of consulting, plant and city engineers.

Layne
SINCE 1882
COMPLETE WATER SERVICE

LAYNE & BOWLER, INC., MEMPHIS

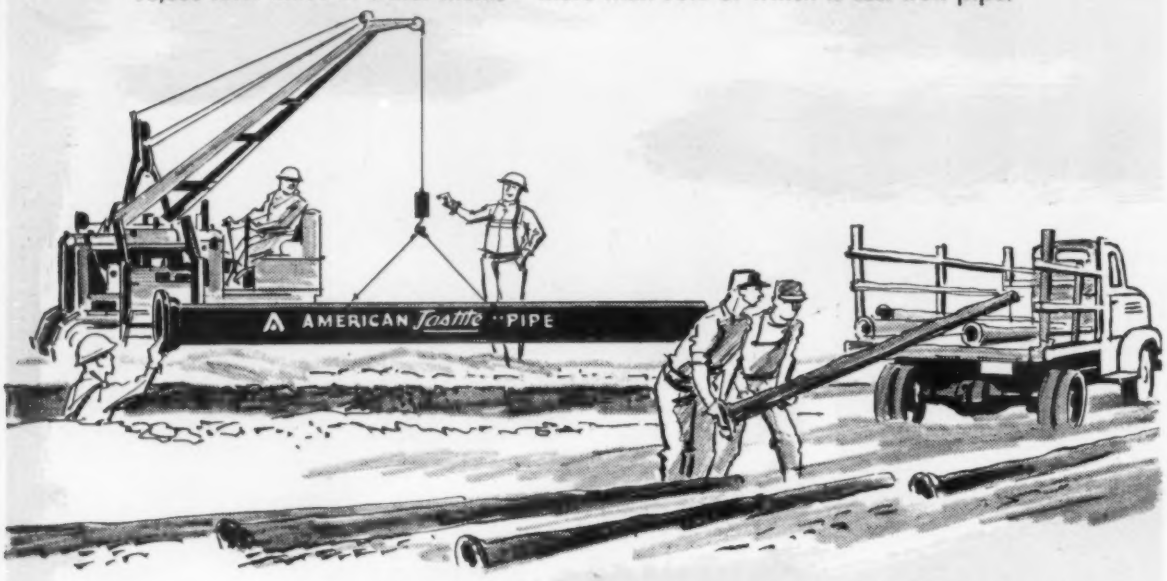
General Offices and Factory, Memphis 8, Tenn.

LAYNE ASSOCIATE COMPANIES THROUGHOUT THE WORLD

SALES REPRESENTATIVES IN MAJOR CITIES

PIPE FACTS

The 100 largest cities in the United States, surveyed recently, have more than 95,000 total miles of water mains — more than 90% of which is cast iron pipe!



DO YOU KNOW that when larger distribution mains are needed, the smaller mains can be reclaimed for years of additional service...if they are cast iron?

In Reading, Pa., for example... seven miles of cast iron pipe was taken up and relaid – saving about $350,000. Rarely, if ever, is composition pipe taken up and re-used.

DO YOU KNOW that cast iron pipe is designed to withstand expected water hammer shocks which can burst weaker mains? In tests, it required 3,400 psi water pressure to burst 6" Class 150 AMERICAN pipe. Composition pipe of similar size and class failed at 770 psi.

DO YOU KNOW that industry requires large volumes of water...and it must be economical? For most new industrial plants, water is the most important natural resource needed. In the long run, cast iron pipe delivers water cheapest of all.

DO YOU KNOW that the AMERICAN Fastite Joint requires no calking? Its only joint component is a dual hardness, easily-inserted, double-sealing rubber gasket. A minimum of labor and equipment is needed to install Fastite pipe...and the extra minutes saved soon total up to additional dollars saved in installation costs.

*Patented conductive gasket

AMERICAN CAST IRON PIPE COMPANY
BIRMINGHAM ALABAMA

All of the collection vehicles are closed and they are equipped with hydraulic devices for raising and emptying the refuse containers.

Refuse containers receive a thorough cleaning twice a year and at that time damaged units are removed from service for repairs or replacement.

Incentive System Cuts Collection Costs

Gothenburg, Sweden, pays its refuse collectors on a piece-work basis. In 1956, when the incentive pay system was established, the Public Cleansing Department used an average of 170 men. By 1959 this was reduced to an average of 120. A reduction in crew size per collection vehicle from four to three men (including driver) constituted the major change.

Annual Fee

The department collects refuse from about 20,000 houses. Upon the payment of an annual fee the house-holder receives from the city a container or bin of standard design. The fee covers the price of the container, plus cleaning and repair costs. This container must be placed at some location on the property readily accessible to the collectors.

The collection crews empty these containers on the average of twice a week. For extra collection the house-holder must make arrangements with the department and pay a separate charge.

Sixty-five vehicles of the compression type, specially built for dustless loading, make up the collection fleet. They are equipped with a hydraulically operated bin-raising and emptying device. The crews use small hand trucks to transport the containers from their location to the truck and back.

All bins or containers are cleaned twice a year at a central shop. This consists of hosing with cold water under high pressure, then with hot soda solution, and finally a high-pressure hosing with hot water. During the cleaning process the workmen sort out all of the damaged containers for repair or rejection.

At the end of 1959 the department had some 51,400 containers in circulation. About 2,500 of these are discarded each year and replaced. ◄◄

Sanitary-Landfill Salvage Nets $11,639

Salvage contractors paid the City of El Paso, Tex., $11,639 in the fiscal year ending February 28, 1961 for the privilege of reclaiming various items from the three sanitary landfills. The city does not incur any expenses from this operation.

The totals for the latest complete fiscal year consist of the following:

• Rags, 3 cents per pound	$1,167
• Non-ferrous metals, 6 cents per pound	900
• Rubber, $60 per year	60
• Glass, $60 per year	60
• Paper and cardboard, $150 per month	1,800
• Tin cans, $3.50 per long ton (2240 lbs.)	7,652
Total Salvage Income	$11,639

Each year the council awards contracts to the high bidders on a unit-price basis for various classes of material. The contractors agree to collect and remove daily only the items for which they have contracted. The "daily" provision prevents the landfills from deteriorating to dumps. For three items contractors submit weight slips to determine the amount of material removed.

Based on monthly calculations, the current fiscal year's salvage receipts should climb to approximately $18,502.

Some of this change results from varying volumes, but most will occur as a result of the current bid for tin-can salvage of $7.08 per long ton, more than twice the unit price bid last year.

E. F. MUCKELROY
Sanitation Superintendent
El Paso, Texas

CUMMINS POWERED FOR PROFIT

Do as Village Carting did, specify Stop & Go Diesels and increase your profits

"We cut fuel bills substantially when we repowered our unit with a Cummins Diesel and we cut our repair bills even more. We haven't had the Cummins in for a service check yet, and it has logged 5,000 hours," reports Pat Serra, owner of Village Carting Company, Inc., Staten Island, N.Y.

You, too, can give low cost service to your community, as Village Carting does, by powering with Cummins. Cummins Diesels idle four to five times longer than gasoline engines on the same amount of fuel. Engine life is typically three to four times longer. Cummins Diesels save you maintenance time and expense because they have no carburetor or electrical ignition systems, the major causes of gasoline engine trouble.

You'll start earning more profit the day you start a Cummins. Repower your present truck or specify Cummins in your new equipment. Eleven *Stop and Go* models are available from 70 to 160 horsepower. For more information read the sixteen page brochure "*Stop and Go* Diesels by Cummins." For your free copy, call your Cummins Distributor or write **Cummins Engine Company, Inc., Columbus, Ind.**

CUMMINS

Albuquerque found this combination emergency truck so successful that it bought a second.

Combined Fire-Disaster Truck

The combination emergency truck shown here was delivered to Albuquerque, N. M., late in 1959—and the city purchased a second unit this past spring. The emergency unit is fire fighter, ambulance, rescue and patrol car on the same four wheels.

A 200-gpm pump and 450 feet of fire hose and a foam tank make it a fire fighter. Ambulance elements consist of four stretchers, oxygen, and resuscitators. As a patrol car it seats 12 men and has loudspeakers and two-way radio. For rescue work it has portable power and pump, saw, oxyacetylene cutting outfit, and floodlights.

The builder is the Christopher Co., 1095 Madison Ave,. New York 28. ◄◄

Anaheim Fire Department on Television

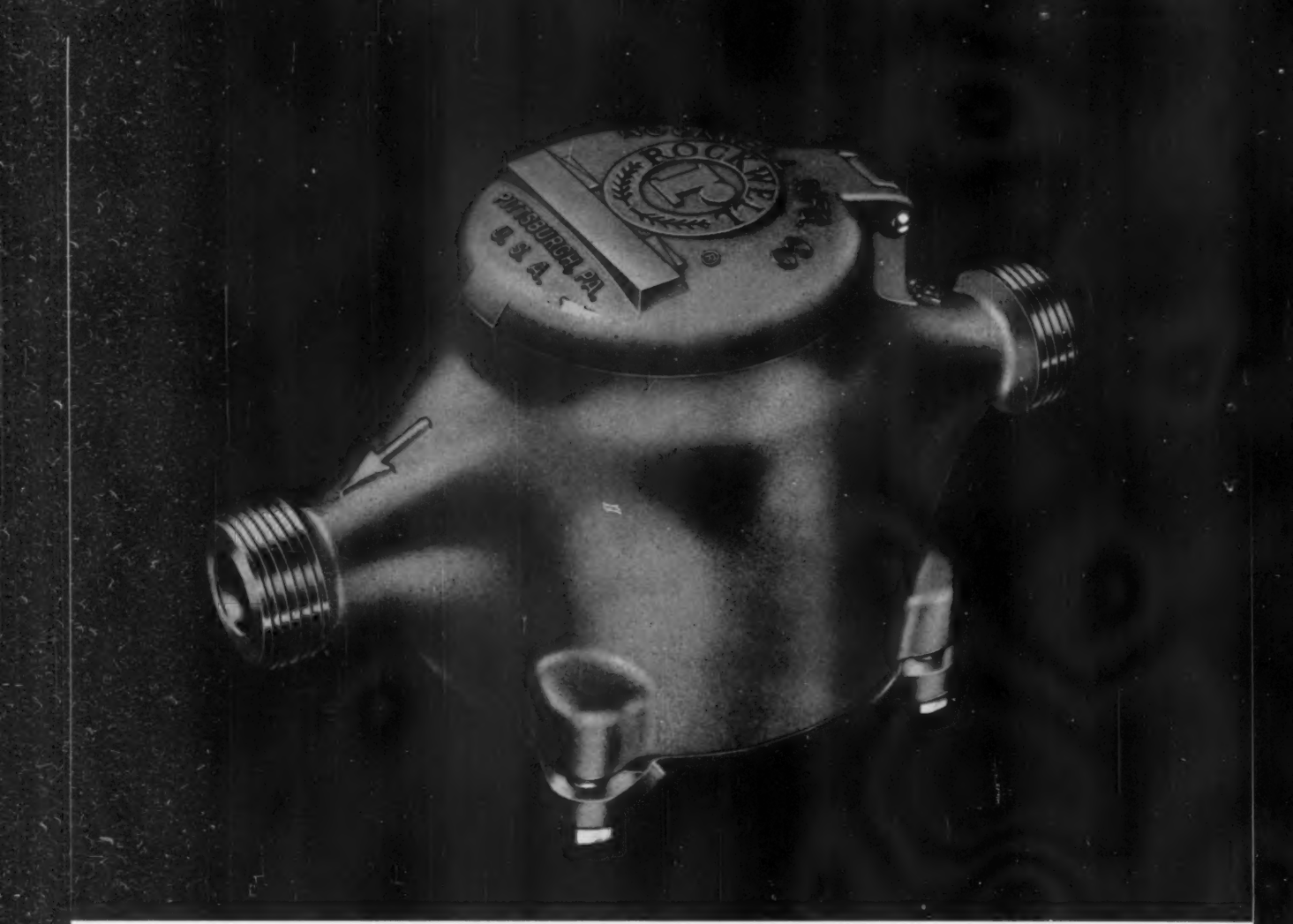
In 1951, there were 15,000 persons residing in the City of Anaheim, Calif.; now there are 110,000. One of the problems thus created was how could the Fire Department continue to reach the minds of our men and women in the fight against fire disaster? The Anaheim City School District's closed circuit television system proved to be the answer.

Last year the Fire Department put on four telecasts. The first, to the school's sixty fifth-grade teachers, explained the program and the teacher's duties. The second and third telecasts were designed for the fifth-grade level and explained fire safety by demonstrations. The final program was telecast by remote control and demonstrated all of the city's fire equipment.

The results of the Fire Department's first year on television have been gratifying to parents and teachers. Time has been saved by the telecasts. Prior to using television, two fire inspectors were kept busy five months out of the year with this educational program. Now this same coverage has been reduced to only 30 hours. Originally, the fire inspectors made four visits to each class room yearly. With television these visits have been cut to two; one visit to answer specific questions and the second visit to award the Junior Firemen their badges. The fifth-grade school teachers now carry a great deal of the responsibility that was previously carried by the Fire Department. Last year 2,280 children and 60 teachers participated in the program in 23 schools. Since television was adopted by the Fire Department, the number of malicious-mischief complaints and false alarms has shown a marked decrease.

CARL HATFIELD
Administrative Analyst
Anaheim, Calif.

Fire Inspectors Garth Menges and Jim Danley demonstrate inflammable gases to 1,700 fifth-grade children over the Anaheim television circuit.



ROCKWELL SEALED REGISTER* METERS

Imitated, but never equalled

The Rockwell Sealed Register* "Magnetic" meter is *not* an adaption of any previous design.

Starting from scratch, Rockwell engineers could and did develop an all-new meter—one that did not compromise any desirable feature.

For instance, they materially *reduced* the number of working parts *instead of adding more.* They made this meter tamper-proof. Greater accuracy was engineered into the design.

From a maintenance standpoint, the Rockwell Sealed Register* meter is by far the *easiest* and *most economical to repair.*

Let our representative prove these facts to you or write for bulletin W-811.

For prompt shipment from warehouse stocks contact Rockwell Manufacturing Company, Department 159J, Pittsburgh 8, Pennsylvania. In Canada: Rockwell Manufacturing Company of Canada, Ltd., Box 420, Guelph, Ontario.

**Trade mark*

SEALED REGISTER* METERS

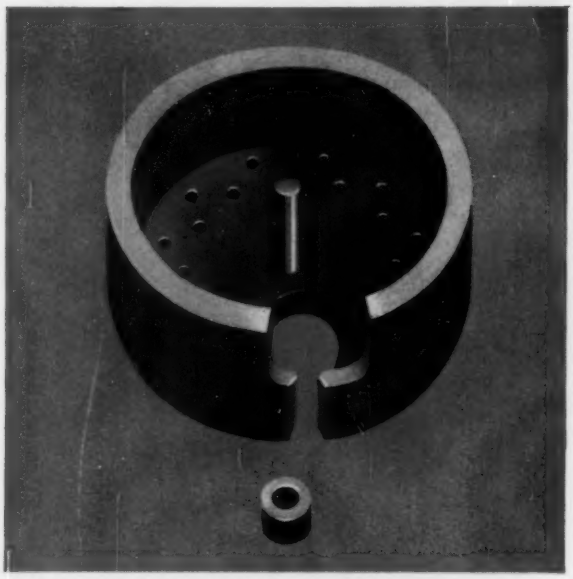
another fine product by

ROCKWELL

4 good reasons why you're dollars ahead using the only completely new "magnetic" meter

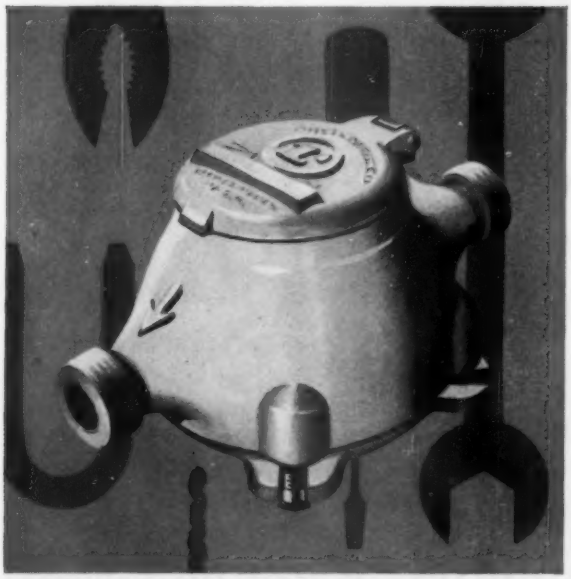
STRAIGHT LINE MAGNETIC DRIVE

A simple, powerful magnetic coupling transmits every motion of the measuring chamber directly to the sealed register in a vertical line. The permanent Alnico magnets are completely sealed. Their strength will not deteriorate with time.



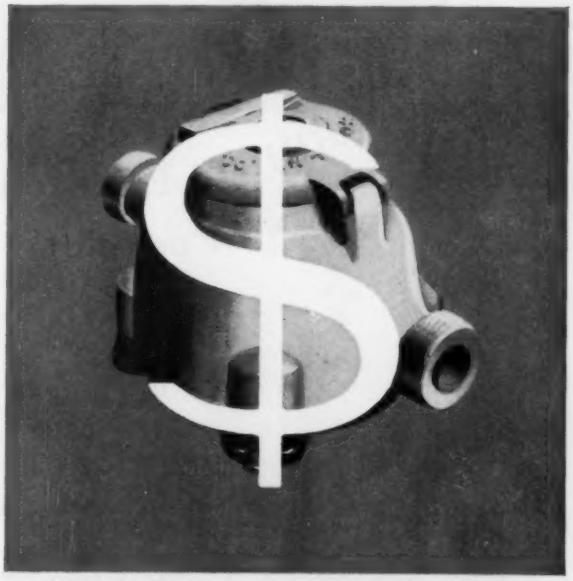
ONLY TWO REPAIR PARTS NEEDED

The piston and piston roller are the only parts operating in water. These two parts are all you need to carry in inventory as compared to the large number required to repair other meters. Using only a wrench, anyone can replace these parts fast.



COMPLETELY TAMPER-PROOF

The sealed register is recessed into the main casing. Even if dismantled, the meter won't work without the register and the register won't turn without the meter. With this meter you'll stop tampering—stop losing important revenue.



COST NO MORE, EARN MORE, SAVE MORE

These better "magnetic" meters cost you no more to buy and cost you much less to maintain than other types of more complicated design. Since they have the fewest parts to wear they are easiest and most economical to repair.

REEVON BRISTLES give longer wear per dollar than any other bristle— natural or synthetic!

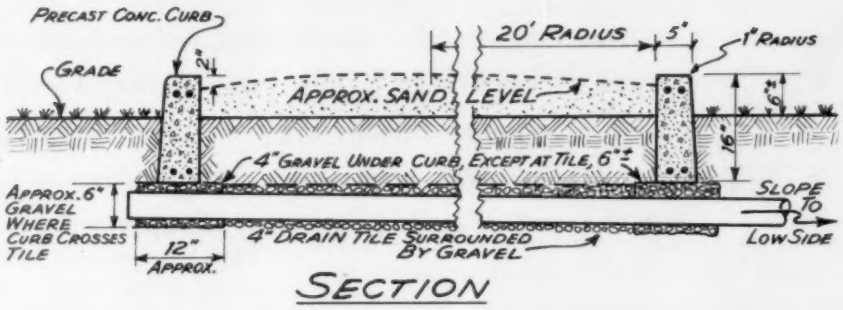
Reevon® polypropylene fiber is made by Reeves – the only manufacturer with an entire plant devoted exclusively to the production of polypropylene for industry. When ordering original equipment or replacement bristles always specify Reevon, distributed nationally by

KAISER-REISMANN CORPORATION
325 Spring Street, New York 13, N.Y.

Reeves Brothers, Inc., Fiber Division 1071 Avenue of the Americas, New York 18, N.Y.

Precast curbs form attractive boundaries.

Precast Curbs for Sandboxes



This section drawing illustrates the details of the construction.

Precast-concrete curb sections save us money and provide a neat, attractive restraining border for sand boxes and tot-lot areas. Local suppliers furnish them in varying radii as well as straight sections so that we can combine them to obtain circles, ellipses, squares and rectangles.

Rapid installation and the elimination of form construction persuaded us to experiment with this type of boundary. The results have proved its economy. In addition, we shall be able to move the boundaries if necessary, an operation that cast-in-place sections would not survive.

The new sections blend well with the colored, precast play apparatus which we construct or purchase. As many children sit and walk on the curbs and play in the sand as use the artificial play aids.

We purchase the 5-inch-wide-by-16-inch-deep curb sections in lengths short enough (about 6 feet) for our maintenance personnel to handle them without the use of mechanical equipment. We anticipate obtaining colored concrete in some future sections to match the apparatus as well as providing a more distinctive boundary to enclose the sandy material.

LEE A. BURTON
Director of Parks and Recreation
Clayton, Mo.

From Golf Balls to Grading

Sun City, Ariz., employs an International Cub Cadet lawn and garden tractor to retrieve golf balls on the driving range. Officials also use this practical machine to tow mowing equipment on city parkways and golf-course fairways and roughs. They occasionally attach a dozer blade for small grading projects around the maintenance yard.

Sun City now has 3,500 residents. One spouse must be at least 50 years of age before a family may purchase a home. Small children may not reside there. ◄

Protected by mesh, the operator collects golf balls on the driving range.

ARE YOU THINKING AHEAD ON FIRE APPARATUS POWERPLANTS?

Perhaps you are one of the progressive fire officials throughout the country who are showing a strong interest in new types of apparatus powerplants. Today's ever increasing protection and budgetary problems may be causing you to look for even better apparatus performance, dependability, and operating economy. If so, you should:

CONSIDER THE ADVANTAGES OF DIESEL-POWERED APPARATUS

Diesel power is the only new power for fire apparatus proved by millions upon millions of miles of actual truck service. Diesel engines provide excellent road and pumping performance because they reach peak h.p. at lower engine speeds than gasoline engines and they excel even the finest gasoline powerplants in dependability and long life. Moreover, they can run 35% longer on each tankful of fuel and idle for hours with no harm to engine.

Equally important, they can cut operating costs as much as fifty percent. Basically more efficient, they provide substantially greater fuel mileage than the best of gasoline engines, using cheaper fuel. And they greatly reduce maintenance costs because they are far more trouble-free. Of all automotive diesel engines built in this country today, the record shows that the leader in performance, economy and dependability is the . . .

MACK THERMODYNE® DIESEL

WHAT ARE THE ADVANTAGES OF THE MACK THERMODYNE® DIESEL?

1 **Maximum performance at operating and pumping speeds.** Develops 230 HP at 2300 rpm and 583 lb.-ft. of torque at 1600 rpm. Turbocharged for peak efficiency.

2 **Minimum fuel consumption.** The inherent efficiency of diesel power gives the advantage of being able to pump 35% longer on a tankful of fuel. Reduces need to refuel during long pumping assignments, eliminates danger of handling highly flammable gasoline, and also eliminates danger of carbon monoxide fumes. Diesel fuel is considerably cheaper than gasoline and contains more BTU's.

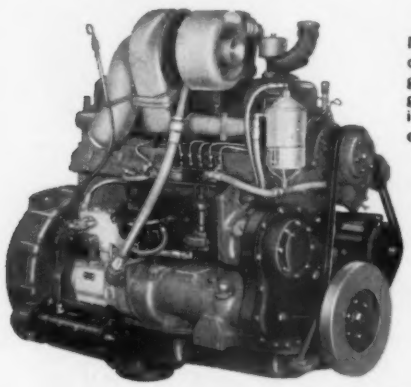
3 **Maximum power at altitude.** No power loss at all up to 6000 feet above sea level with the Mack Turbocharged diesel and only a 2% loss per 1000 feet above 6000. With gasoline power the loss is 3% per 1000 feet right from sea level on up.

4 **Maximum dependability 4-cycle, 6-cylinder design.** Cooler-running. No spark plugs to foul. No ignition systems to short out. The most dependable engine ever made by Mack—the standard of dependability.

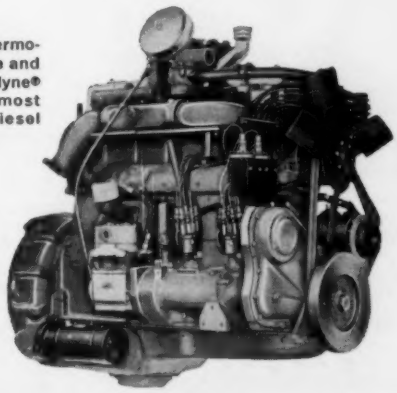
5 **Minimum maintenance.** Mileages of 300,000, 400,000—even 700,000 miles in truck service—before engine overhaul means thousands of engine hours in fire service. Will not foul up during long periods of idling. Built with typical Mack strength and servicing ease. Similarity to Mack Thermodyne® gasoline engines simplifies mechanics' training—over 350 Mack service centers expedite servicing and parts supply.

The famous Thermodyne® diesel engine is made by Mack. It is part of the exclusive Mack concept of Balanced Design . . . by which all major components are Mack-built to the highest standards of the industry . . . to work together to a degree of efficiency unmatched by apparatus assembled with purchased components. We build them —we stand behind them 100%. Who else can say the same? Mack Fire Apparatus, Allentown, Pennsylvania. Mack Trucks of Canada, Ltd., Toronto, Ontario.

8457

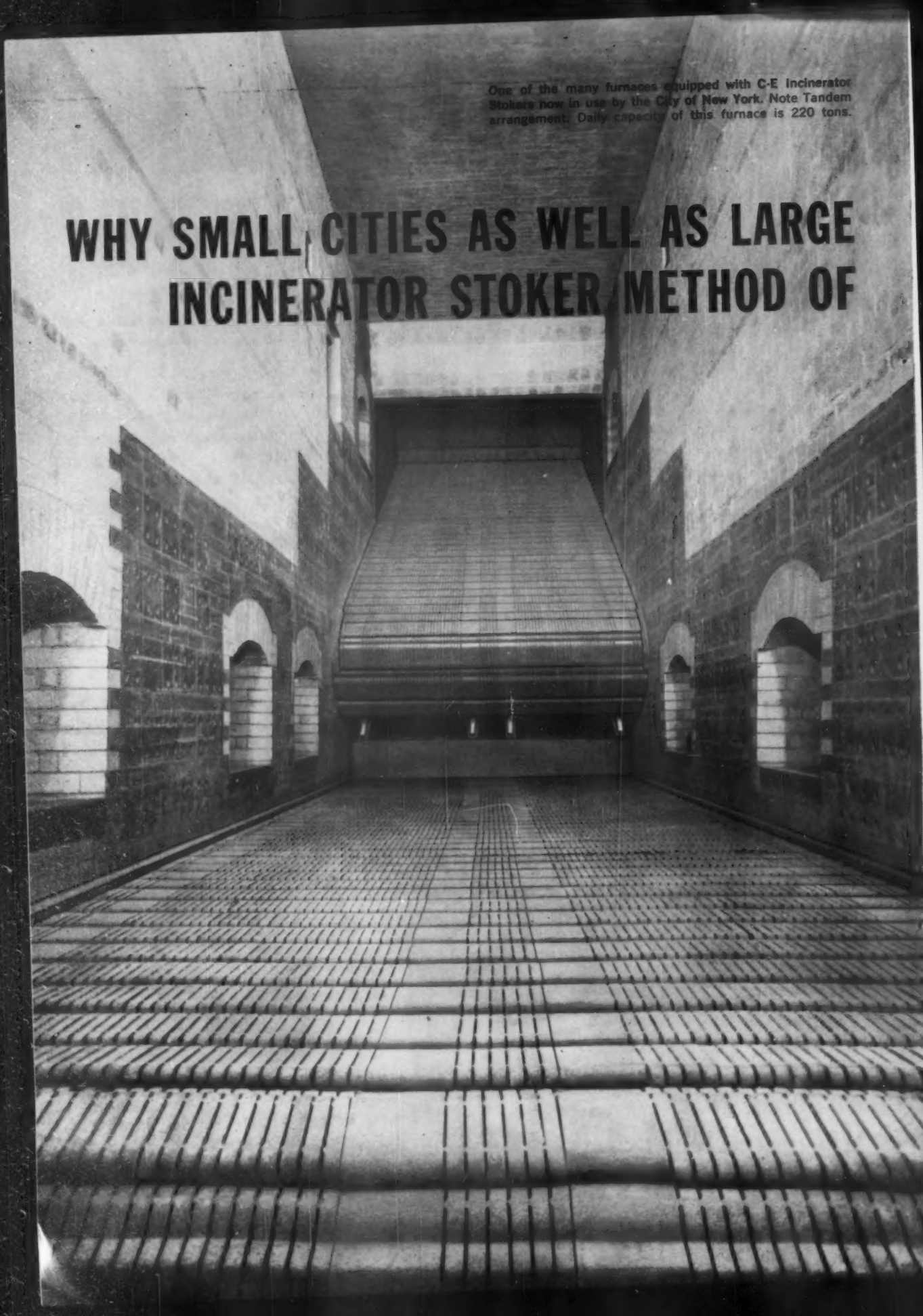


Note similarity of Mack-built Thermodyne® diesel and gas engines! Size and general appearance of Thermodyne® gasoline engine (right) are almost identical with Thermodyne® diesel engine (left).



MACK FIRST NAME FOR FIRE APPARATUS

COMPLETE LINE OF PUMPERS . . . 500 TO 1250 GPM . . . SQUAD AND HOSE WAGONS . . . AERIALS 65' TO 146' . . . COMBINATION LADDER TRUCKS



One of the many furnaces equipped with C-E Incinerator Stokers now in use by the City of New York. Note Tandem arrangement. Daily capacity of this furnace is 220 tons.

WHY SMALL CITIES AS WELL AS LARGE INCINERATOR STOKER METHOD OF

PREFER THE C-E REFUSE DISPOSAL

Cities of all sizes use C-E Traveling Grate Incinerator Stokers. New York, for example, uses 30 C-E Incinerator Stokers with a total daily capacity of 3,660 tons. New Albany, Indiana (population about 25,000), uses 2 C-E Stokers with a daily capacity of 160 tons.

Refuse becomes clinker-free, sterile ash

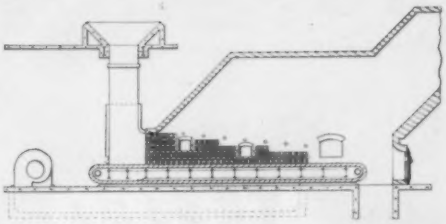
C-E Incinerator Stokers are expressly designed for the rapid, complete and continuous processing of mixed combustible refuse typical of most communities. Refuse is transformed into clinker-free, sterile ash – ideal for land fill.

Cuts maintenance and operating costs

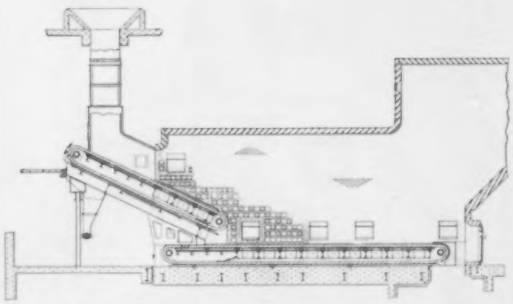
City administrators also find that C-E Incinerator Stokers cut operating and maintenance costs. Only minimum maintenance is required from the time refuse is dumped into the hopper until residue is ready to be hauled away. Man-hours for operation and maintenance per ton of refuse are lower than for any other burning method. Availability of the equipment is very high.

We'll gladly consult with you as to the arrangement best suited to your community's needs. Please address your inquiry to your nearest C-E office or to the General Offices in Windsor, Conn.

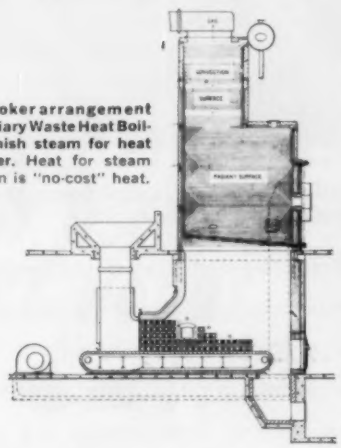
FLEXIBLE DESIGN ADAPTS TO NEEDS OF INDIVIDUAL COMMUNITY



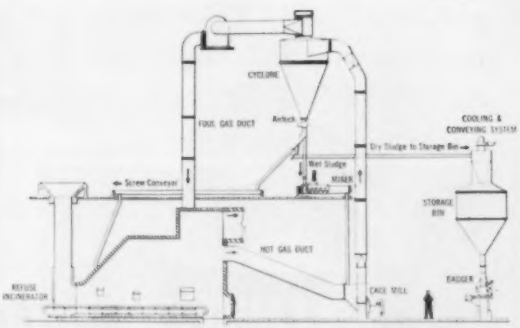
1. **Single stoker arrangement recommended for smaller communities.** Capacity ranges upward from 50 tons per 24-hour day.



2. **Tandem stoker arrangement recommended for larger communities.** Refuse is dried on the inclined grate prior to burning on the horizontal grate.



3. **Single stoker arrangement with auxiliary Waste Heat Boiler to furnish steam for heat and power.** Heat for steam generation is "no-cost" heat.



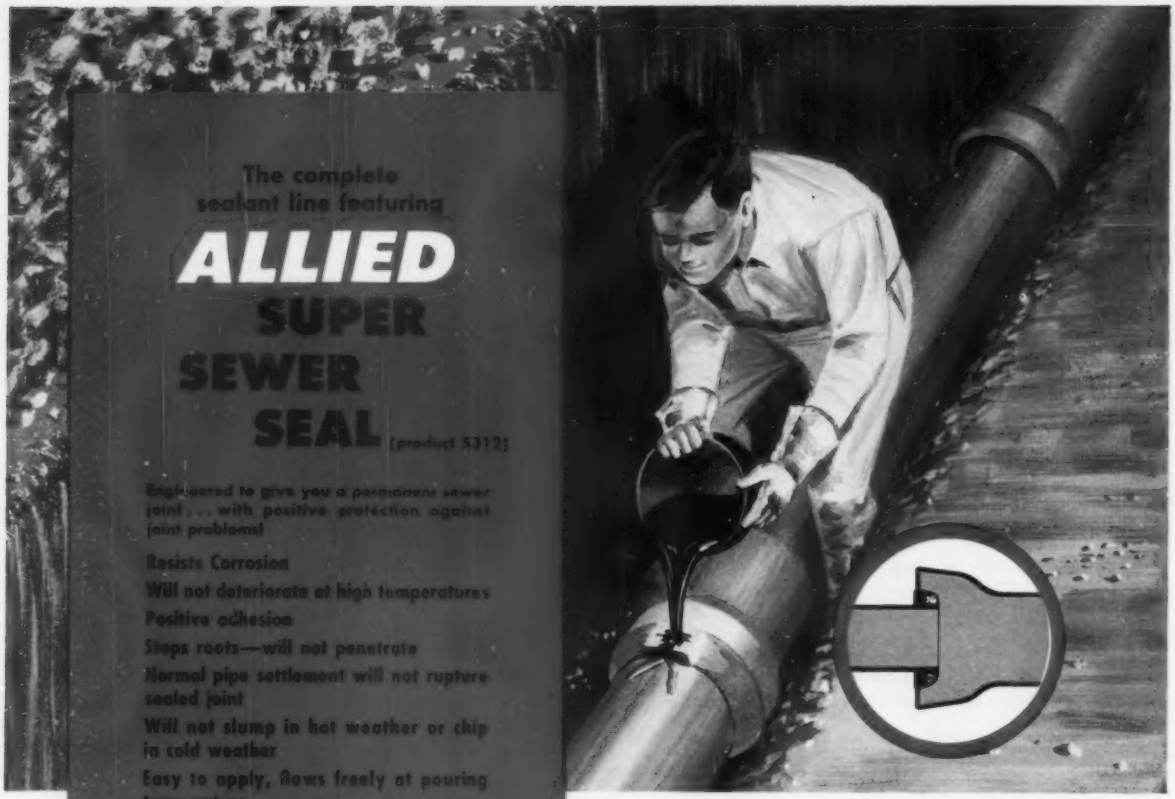
4. **Arrangement for disposal of both refuse and sewage sludge.** Features C-E Raymond Flash Dryer to dry sludge for burning in the furnace, or for use as a sterile soil conditioner.

COMBUSTION ENGINEERING

C-330

General offices: Windsor, Connecticut
New York offices: 200 Madison Avenue, New York 16

ALL TYPES OF STEAM GENERATING, FUEL BURNING AND RELATED EQUIPMENT; NUCLEAR REACTORS; PAPER MILL EQUIPMENT; PULVERIZERS; FLASH DRYING SYSTEMS; PRESSURE VESSELS; SOIL PIPE


The complete sealant line featuring
ALLIED
SUPER
SEWER
SEAL (product 5312)
Engineered to give you a permanent sewer joint . . . with positive protection against joint problems!
Resists Corrosion
Will not deteriorate at high temperatures
Positive adhesion
Stops roots—will not penetrate
Normal pipe settlement will not rupture sealed joint
Will not slump in hot weather or chip in cold weather
Easy to apply, flows freely at pouring temperature

Allied's Quality Control Saves You Money, Time and Manpower.

Every pound of Allied Super Sewer Seal gives you maximum performance for trouble-free sealing. This hot poured sewer joint compound has been engineered to the most rigid specifications by Allied all the way from research and development to production. It has been performance-proved on the toughest jobs. You can use Allied Super Sewer Seal with confidence that it will perform *as specified* under the most rugged conditions.

The World's Finest Hot Poured and Cold Applied Sewer Joint Sealing Compounds.

The Allied line of sewer sealants covers the ENTIRE field. Choose the one suited to YOUR needs . . .

PRODUCT NO.	DESCRIPTION
*5312 Super Sewer Seal	Hot Poured Plastic Type
*5310 Sewer Seal	Hot Poured Asphalt Type
*5311 Sewer Seal	Hot Poured Asphalt Type
*9859 Sewer Seal	Hot Poured Coal Tar Type
*9865 Sewer Seal	Hot Poured Coal Tar Type
7206 Sewer Seal	Cold Applied Asphalt Mastic Type
6963 Sewer Seal	Cold Applied Asphalt Mastic Type

***These Products meet all requirements under Federal Specifications SS-S-169**

For further information about ALLIED SUPER SEWER SEAL and the complete ALLIED Sewer Seal line, write:

ALLIED MATERIALS CORPORATION
Producers, Refiners and Compounders of Special Asphalt and Coal Tar Products

Allied Building • 5101 N. Pennsylvania • P. O. Box 7278-39th Street Station • Oklahoma City, Okla.
PLANTS: Stroud, Okla. Detroit, Mich. Los Angeles, Calif.

Observe National Public Works Week, October 1st to 7th

Last year, for the first time, two national organizations dedicated a special week to honor the men who build, maintain and operate our municipal engineering and public works facilities. These groups were Kiwanis International and the American Public Works Association. The selection of the Top Ten Public Works Men-of-the-Year, during this week played a successful part in the program.

This year, these two organizations have again joined forces to sponsor a second National Public Works Week, scheduled for the week of October 1-7. While local clubs and chapters of these two organizations will actively participate in various activities and promote numerous programs, many activities can be carried out by the various government agencies on all levels. This is particularly true of municipalities. Ways in which the municipality can actively participate include:

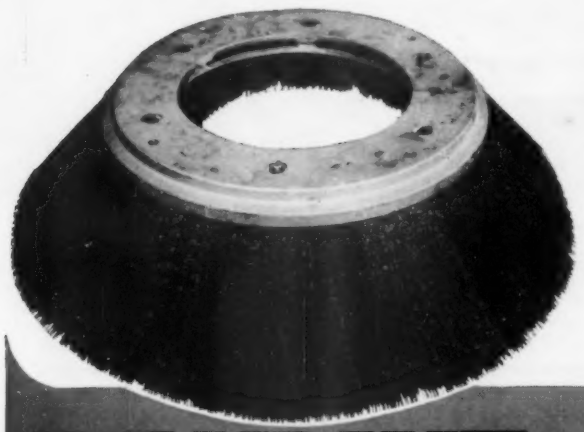
- **Conduct open-house programs at local public-works facilities and plants. Arrange trips to special projects and organized tours for elementary and high school students as well as local citizens. Provide special bus service to and from the installation starting from a central point.**
- **Have public-works officials speak to senior students about job opportunities in public works as a profession.**
- **Encourage local advertisers and newspapers to utilize the National Public Works Week seal in any way they can during this week.**

- **Supply the local press with material for special articles, editorials, and photographs of public-works activities.**
- **Arrange for dedication or anniversary ceremony of some kind of public-works facility which could be publicized.**
- **Set up a public-works equipment display and include demonstrations if possible.**
- **Obtain the cooperation of teachers by having students do research and write papers on public works and its importance to the community.**
- **Issue a formal proclamation announcing National Public Works Week.**
- **Actively participate with the local Kiwanis Club.**

While this special week provides an opportunity for all citizens to pay tribute to public-works officials, it also provides an excellent opportunity for the municipality to point out to its citizenry the true value of the public-works profession. ◄◄

SKATING-RINK AIR CONDITIONER

Oak Park, Mich., plans to put to double use the refrigeration equipment that freezes its artificial ice-skating rink in winter. Its compressors, in summer, will provide air conditioning for the adjoining community center and library.



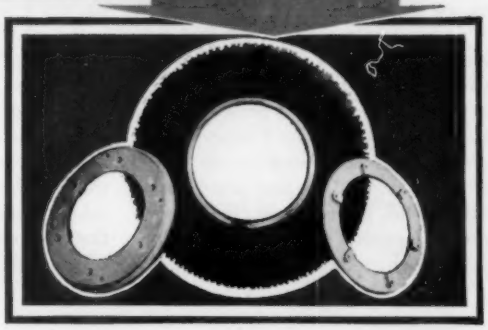
DO IN 10 MINUTES WHAT USED TO TAKE HOURS

USE...

DANLINE PREMADE GUTTER BROOMS!

59-33

Only with Danline Premade Gutter Brooms can you strip and refill worn brush sections in minutes — *instead of hours!* Unique construction of Danline housing holds complete gutter broom in one premade section. Remove only 6 bolts, insert new section, fasten bolts — you're ready to resume sweeping. Factory fabrication insures proper balance of brush, eliminates shimmy. Easy! Simple! Economical! Write now for facts and illustrated literature.



Leadership Proved Through Performance!

NEWARK NEWARK BRUSH COMPANY
260 MICHIGAN AVENUE
KENILWORTH, NEW JERSEY

Brookfield, N.Y., finds Best Bid the best way to buy

"We buy machines as if we had to make a profit with them"

Mr. Lester D. Burch, Township Superintendent, Brookfield, New York: "Our community doesn't buy construction equipment very often. When we do, we need equipment that will give us the best possible performance—and do it at the lowest cost. That's why we look for *best bid* when we buy.

"No one knows more about *best bid* than a construction man who has to make money with his machines. And most contractors I know prefer to buy Caterpillar equipment. I figure what works for them will work for us.

"And it does. Take our new 93 HP D6B Tractor, for example. It has one feature alone that makes it worth a lot more to us than the other machines bid. This is the hydraulic tilt cylinder attachment. Our road work involves a lot of ditching. The tilt cylinder attachment lets the operator tilt the blade without leaving his seat. The amount of time this saves—and extra work it helps us get done—really adds up when you do a lot of ditching."

Mr. Burch mentioned another reason the town selected the D6. They needed a machine that would stay out of the shop—keep on the job. They liked the idea of the oil clutch that almost never needs attention . . . lifetime lubricated track rollers they could forget until rebuild time . . . the dry-type air cleaner that gets rid of the expense and mess of oil bath filter elements. All in all, the combination of extra performance, dependability and low-cost maintenance offered by this machine made *best bid* buying the town's best bet. Where it gives the private contractor a profit, it saves money for taxpayers.

Check the money-saving, time-saving features of Caterpillar-built machines when you need a tractor, loader, motor grader, engine or other earth-moving equipment. Your Cat Dealer can give you complete facts and a demonstration if you wish. And ask him about our new sanitary landfill movie: "A Decent Burial." He will be glad to arrange a showing.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

CATERPILLAR

Caterpillar and Cat are Registered Trademarks of Caterpillar Tractor Co.

City "Managetrix"

Recently the 12th woman entered the city manager profession wnen Maywood, Ill., appointed Mary Lou Sabatello as village manager. The International City Manager's Association reports that Maine has six such managers: Mrs. Agnes Baxter, Stockholm; Mrs. Claudene Brown, Castle Hill; Mrs. Marion Huggins, Madison; Florence H. Michaud, Frenchville; Anna L. Schools, Littleton; and Mrs. B. M. Visonhaler, Blaine. The other women are: Mrs. Betty Meagher, New Rochelle, N. Y.; Mrs. Ora L. Thomas, Dormont, Pa.; Mrs. Herbert Ward, Tazewell, Va.; Sylvia Midlam, Salem, W. Va.; and Mrs. Felisa Rincon de Gautier, San Juan, Puerto Rico. ◄◄

Two Cities Honored by Freedom Foundation

Augusta, Kan., and East St. Louis, Ill., shared the spotlight when advertisements prepared by Mobil Oil Company won a George Washington Honor Medal from the Freedoms Foundation at Valley Forge. The ads are part of a community-relations program by the company's refineries in each city and appeared in local newspapers.

The Augusta ad, showing pictures of the mayor and three city councilmen, describes the progress and planning that have gone into the city's growth. It pays tribute to the volunteers and the salaried officials who apply time and talent to city government.

One of the East St. Louis ads is titled "Invitation to come out voting" and shows two employees from the Mobil refinery unit. The advertisement appeared in the *East St. Louis Journal* just before election day and encouraged all eligible voters to go to the polls.

A second advertisement in East St. Louis called attention to the All-America-City award won earlier by the city and said: "The fact about which we're most proud is the continuing work of citizens in East St. Louis. They didn't stop on February 20, 1960, when the All-America-City flag was raised. They said, 'The job is just started.' It's this wonderfully progressive spirit that makes us at the Mobil refinery so glad to be part of East St. Louis as it builds a brighter tomorrow."

The three advertisements from Augusta and East St. Louis were chosen by the Freedoms Foundation for "helping to bring about a better understanding of the American way of life during 1960." ◄◄

Air Pollution Control News

Denver's New Rules

Denver has enacted two new ordinances against air pollution. They establish standards for home and industrial incinerators, limit incineration burning to the hours of 1 to 6 P.M., require property owners to cut and remove weeds at least twice each summer and prohibit the open burning of weeds or trash. Property owners are given one year to comply with the minimum standards on incinerators.

Engine Ends Jet Trails

The turbofan or fanjet engine, now being delivered to a number of American and foreign airlines, not only cuts fuel costs and is quieter than conventional jets but it requires no water injection on takeoff. Water injection, needed for initial thrust of the engines, was responsible for the smoke trails which have characterized most of the takeoffs of American jets used in domestic service. . . . The problem of air pollution from jets is figuring in a controversy in New Jersey as to where the Port of New York Authority will establish a giant new airport. The township, in which the Authority has indicated it wants to place the airport, cites the air-pollution problem created by jet aircraft as one of the reasons against it.

Disputed Rule Extended

Rule 62, the controversial Los Angeles County measure restricting the use of fuels other than natural gas to certain times of the year, has been extended an additional 30 days, to cover a seven-month period from April 15th through November 15th of each year.

Foresee New Use for "Lopair"

"Lopair," an Army Chemical Corps device which uses a highly sensitive infrared "eye" to detect minute degrees of air pollution at a distance of a quarter of a mile, is also able to distinguish one chemical substance from another. While designed primarily for troop use, applications for air-pollution studies and the control of stack gases are foreseen.

Grant Spurs Study

The results of an April study of the possible relationship between chronic lung illness and air pollution are being tabulated. The study, undertaken by the Queensboro Tuberculosis and Health Association in a New York City area just across the East River from the United Nations, is being supported by a grant from the National Tuberculosis Association. A task force of government, research and voluntary health groups has been working on the pilot project.

Two New Publications

Two recent publications should be of interest to those concerned with the fight for cleaner air. One is a reprint of a speech, "Air Pollution Needs Action Now," by Vernon G. MacKenzie, chief of the Division of Air Pollution, Public Health Service, United States Department of Health, Education and Welfare. It may be obtained by writing to the Division, Washington 25, D. C. The other is the 1960 Annual Report of the New York City Department of Air Pollution Control. It may be obtained by writing to Publications, Department of Air Pollution Control, 15 Park Row, New York 38.

—Prepared by Kenneth Kowald

Have You Problems?

These Free Booklets Will Help You

Check over these listings which will provide you with important up-to-date information on equipment and services that will assist you in solving municipal problems.

Write to address given or circle corresponding number on free post card on page 55.

Double-Duty Sewage Treatment Equipment

410 *Bulletin* 6051 describes the Sedi-floter-clarifier, which provides both sedimentation and flotation by removing flotable materials and settleable solids. It is for use where space is limited and high rate production a must. Write INFILCO, INC., TUCSON, ARIZ.

Mobile Hydraulic Hammers

411 The two new side-action hydraulic hammers — G400 and D500 — introduced by ARROW MFG. CO., 194 W. DAKOTA AVE., DENVER 9, COLO., have important design features that make possible faster tamping, breaking and cutting at lower cost. Write for details.

New Asphalt Plants

412 Descriptive literature is now available for Models L-301B and L-501, 1500 and 2000-pound batch asphalt plants of low-cost design, introduced for 1962 by WHITE MFG. CO., 1235 W. BEARDSLEY AVE., ELKHART 25, IND., for production of maintenance asphalt.

Pipe Inspection by Monitored TV

413 Pipe fractures, settled pipe, uneven grades and countless other problems in underground pipes can be efficiently and economically pinpointed by monitored TV cameras without disrupting municipal services and without tearing up streets and pavements. For details, write AMERICAN PIPE CLEANING CO., 1819 NICOLLET AVE., MINNEAPOLIS, MINN.

Flexible Flanged Coupling

414 Just issued by SMITH-BLAIR, INC., 535 RAILROAD AVE., SOUTH SAN FRANCISCO, CALIF., 12-page *Catalog* No. 1255 gives details on how flexible flanged coupling adapters can be incorporated into the design of water, sewage or gas systems or used for "cutting-in" flanged fitting installations in existing pipelines.

New Refuse Collection Body

415 A 21-yard push-out refuse body packs loads tighter, works economically, unloads on uneven terrain or on soft landfill, remains level when ejecting loads through rear door opening, requires overhead clearance of only 10 feet. Details from HOBBS HYD-PAK DIVISION, HOBBS TRAILERS, 609 N. MAIN, FORT WORTH, TEXAS.

Sewer Rodding Equipment

416 If you've not seen the new catalog offered by FLEXIBLE INC., 415 S. ZANGS BLVD., DALLAS, TEX., chances are that you're not posted on the facts about the company's three new sewer rodding machines—1961 SeweRoder, camdrive UniRoder, compact SeweRoder. They all incorporate new, important features.

Truck Bodies for Municipal Use

417 These well-designed, functionally-built delivery truck bodies serve the needs of numerous municipal departments—fire, police, water, maintenance. They are ruggedly constructed to give trouble-free service over a long period of time. Write BOYERTOWN AUTO BODY WORKS, INC., BOYERTOWN, PA.

Salt Water Conversion

418 Illustrated *Bulletin* GED-4135 reports on the current status of G-E's new thin-film water distillation process for the efficient distillation of salt and brackish waters and indicates potential applications in the municipal, industrial and marine areas. Write SECTION 155, GENERAL ELECTRIC CO., LAKESIDE AVE., BURLINGTON, VT.

Record Handling for the Municipal Utility

419 This 4-page folder illustrates how numerous utilities make use of rotary filing equipment to give maximum access to records in minimum space and to service customer inquiries and expedite service calls in record time. Write ACME VISIBLE RECORDS, INC., CROZET, VA.

Handbook on Laying Concrete Pressure Pipe

420 A 16-page pocket-size manual lists the step-by-step procedure for laying concrete pressure pipe, including trenching, checking grade, pipe handling, lubricating and making the joint, checking gasket, completing the joint and bedding the pipe. For copy, write PRICE BROTHERS CO., 1932 E. MONUMENT AVE., DAYTON 1, OHIO.

3-Wheel Utility Vehicles

421 Eight-page "Twice the Power for Cushman Trucksters" illustrates and describes the 1962 line of Cushman 3-wheel vehicles which now are being used for municipal tasks ranging from parking meter patrols to water meter repair jobs. Write CUSHMAN MOTORS, LINCOLN, NEBR.

Long-Wearing Chain for Sludge Collection Scrapers

422 This long pitch pintle chain is just right for sewage treatment plant service, and has proved itself to be highly serviceable, long wearing and moderate in price. You can obtain complete information on it from MOLINE MALLEABLE IRON CO., ST. CHARLES, ILL., specialists in chain manufacture.

Police Motorcycles

423 A newly issued 12-page brochure gives full facts on the versatile line of motorcycles and all-purpose Servi-Cars manufactured by the HARLEY-DAVIDSON MOTOR CO., MILWAUKEE 1, WIS. Address request to DEPT. AC-3.

New Vacuum Leaf Loader

424 Model LL-HCN, with hydraulically controlled nozzle, collects leaves from grass areas above curb without damage to lawn or plantings. For details on other significant advantages of this model over other types, write to GLEDHILL ROAD MACHINERY CO., GALION, OHIO.

New Snow Plows

425 The S-Series one-way snow plows are new to the Frink line. They feature increased curvature, higher front end, and other new design characteristics that boost efficiency. For details, write FRINK SNO-PLOWS INC., CLAYTON, N. Y.

Use Waterproof Paper Bags for Refuse Collection

426 Westvaco has developed a clean, noiseless, sanitary system of waste collection that is also efficient. It is based on the use of heavy, waterproof paper bags for refuse containers instead of conventional garbage cans. Write WEST VIRGINIA PULP AND PAPER CO., MULTIWALL BAG DIV., 230 PARK AVE., NEW YORK 17, N. Y.

Develops New Refuse Collection Body

427 The "Pack-King" is a totally new, all-hydraulic refuse collection body, developed by M-B CORP., NEW HOLSTEIN, WIS. It loads from the side, is available in four sizes up to 24 cubic yards and can be mounted on any truck chassis.

Sewer Sealants

428 In the Allied line there's a sewer joint sealing compound to suit your needs—hot poured plastic, asphalt, and coal tar types as well as cold applied asphalt mastic types. For full information, write ALLIED MATERIALS CORP., 5101 N. PENNSYLVANIA, P. O. BOX 7278 39TH ST. STATION, OKLAHOMA CITY, OKLA.

De-Icing Salt Clinic

429 Want to learn how to handle de-icing salt more economically and more efficiently? Then why not write to MORTON SALT CO., INDUSTRIAL DIVISION, DEPT. AC-9, 110 N. WACKER DRIVE, CHICAGO 6, ILL. It maintains a department to advise on salt handling problems. No obligation.

Help for Failing Sewers

430 Complete information and technical data are available on this new advancement for the rehabilitation of leaky, corroded, defective sewers, which involves the use of leak-tight plastic pipe linings. Write EVANITE PLASTIC CO., division of THE EVANS PIPE CO., UHRICHSVILLE, OHIO.

Wire Fiber Sweeper Brooms

431 Street sweeping a problem? Perhaps NEWARK BRUSH CO., 260 MICHIGAN AVE., KENILWORTH, N. J., can help by sending you information on Danline wire street sweeping brushes for power sweepers. Sturdy, durable, efficient, they also save money on heavy sweeping.

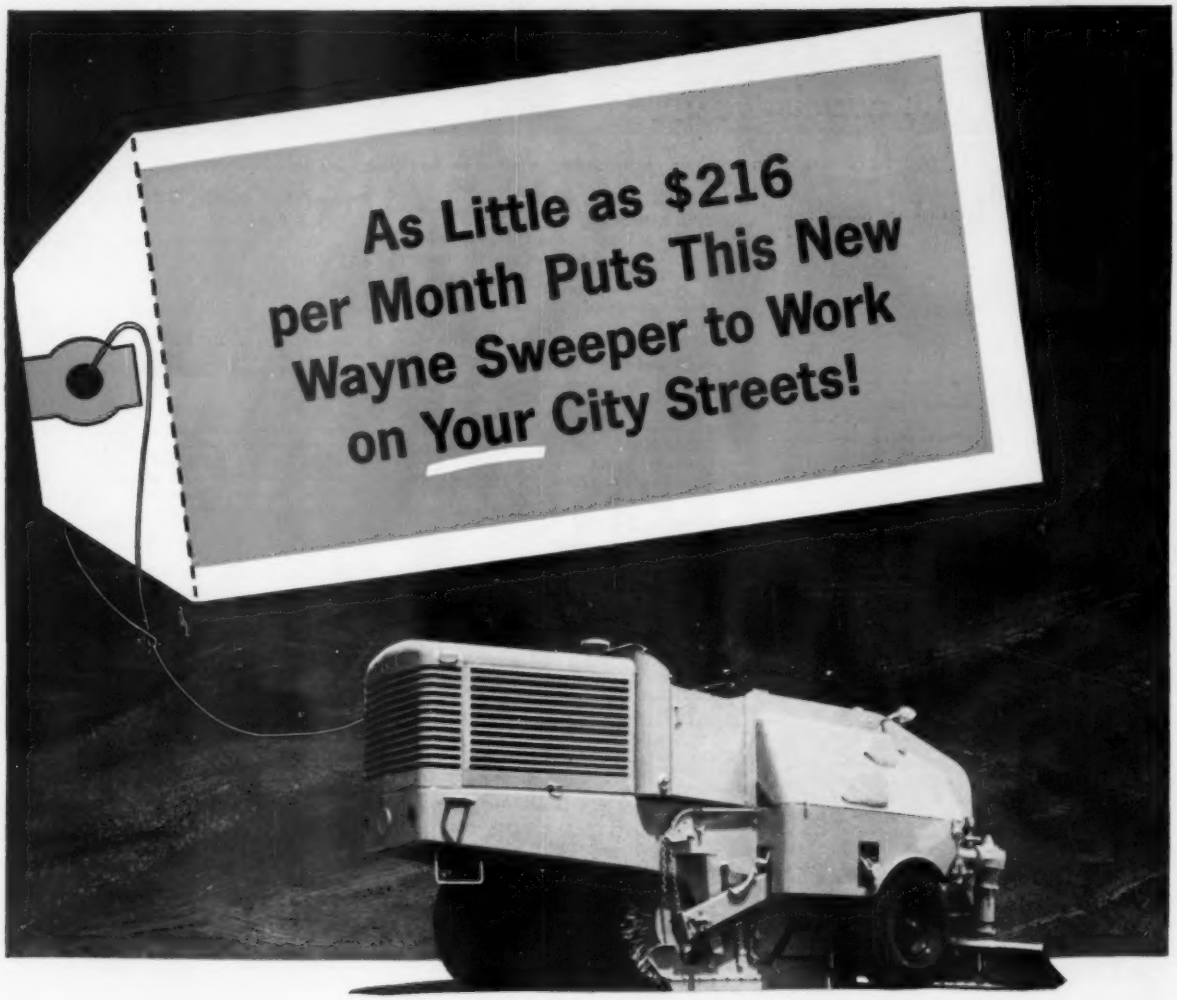
New Planning Aid

432 SANBORN MAP COMPANY, INC., 629 FIFTH AVE., PELHAM, N. Y., which offers diverse assistance to planners, engineers, assessors, public utilities, market analysts, and other city officials, announces a new planning aid for cities—a buying power map, which shows up-to-date statistical data on neighborhoods, including average net income per household.

Ice Control Spreaders, Snow Plows

433 THE FLINK CO., 5509 N. VERMILLION ST., STREATOR, ILL., manufacturer of snow plows and ice control rigs, is making available literature on ice control and seal coating as well as specifications and catalog on its snow plows.

(See page 48 for more Bulletins)



Now *every* city can acquire a Wayne Street Sweeper without capital investment for as little as $216 per month—*less than the cost of one man with a pushbroom!*

Wayne's ***New*** 48-month Rental Plan enables you to immediately start your own street sanitation program . . . to have sparkling clean streets everywhere in your city. You pay rent from operating funds. Labor savings *more* than cover the cost! And you can own your Wayne at the end of the rental period *for just $1.00*. What's more, you choose your own rental payment schedule.

All Wayne Street Sweepers are available through the new Wayne Rental Plan.

Before you invest in *any* street cleaning program, find out how easy it is to acquire the finest sweeper built—Wayne. For full details, send the coupon today. Your inquiry will receive our prompt attention.

You are invited to visit our booths A-19 and A-20 at the 1961 APWA Congress in Minneapolis, September 24-27.

WAYNE MANUFACTURING CO.
4001 East Lexington Street
Pomona, California

Send me details on the Wayne Rental Plan

Name_____

Title_____

Address_____

City_____ Zone____ State____

WAYNE MANUFACTURING CO.

Main Plant and Offices:
4001 EAST LEXINGTON STREET, POMONA, CALIFORNIA

Branch Offices:
- CHICAGO, ILLINOIS
- NEWARK, NEW JERSEY
- ATLANTA, GEORGIA

Export: Henry R. Jahn & Sons, Inc., New York City

Here is Your Opportunity to Improve Conditions in Your City

These free catalogs will supply many new ideas for municipal money saving.

Write to address given or circle corresponding number on free post card on page 55.

Portable Utility Pump

434 Dewatering excavations, filling reservoirs, emergency storm pumping are among the applications handled by this new engine-driven PUP pump, which moves 3300 gallons of water per hour and is powered by a 2½-hp vertical engine. Write PEERLESS PUMP, HYDRODYNAMICS DIV., FMC CORP., 301 WEST AVE. 26, LOS ANGELES 31, CALIF.

Sprinkler Systems for Parks, Golf Courses

435 Key to healthier, greener, better-looking turf areas for parks, golf courses, athletic fields, schools, etc. is a successful irrigation system. BUCKNER MFG. CO., INC., P. O. BOX 232, FRESNO 8, CALIF., will provide information on low-cost, efficient sprinkler systems.

Lightweight Self-Priming Pump

436 A 2-inch pump recently added to the self-priming line of pumps manufactured by ESSICK MFG. CO., 1950 SANTA FE AVE., LOS ANGELES 21, CALIF. has a convert-a-seal feature that allows in field conversion from general pumping to special application pumping.

Rapid Sludge Removal

437 *Bulletin* 315-81 explains how Rex Unitube Tow-Bro provides positive, uniform, gentle and rapid sludge removal with highest possible sludge concentration by employing gentle suction action only. Write CHAIN BELT CO., 4648 W. GREENFIELD AVE., MILWAUKEE 1, WIS.

Lightweight, 9-Transistor Walkie-Talkie

438 PERSONALPHONE provides instant two-way communication, has maximum range of 2 miles on land, 6 over water, can be carried in shirt pocket. For additional information, write FULBRIGHT RADIO AND T.V., 2 S. FLORISSANT RD., FERGUSON 35, MO.

Soap-Dispensing Systems

439 . . . for public washrooms are evaluated in *Engineered Maintenance Data Sheets* 540 A&B. No brand names are mentioned. Results of usage tests conducted by Institute of Sanitation Management are included. Write PURITAN CHEMICAL CO., 916 ASBY ST., N. W,. ATLANTA 18, GA.

Water Storage Tanks

440 A new 44-page brochure describes the overall scope of activities of PITTSBURGH-DES MOINES STEEL CO., NEVILLE ISLAND, PITTSBURGH 25, PA. Special sections are devoted to types of storage tanks and vessels; water purification and filtration; bridges, grandstands, etc., wind tunnels and space age facilities.

New Development in Flow Measurement

441 LEUPOLD & STEVENS INSTRUMENTS, INC., 4445 N. E. GLISAN ST., PORTLAND 13, ORE., reports that measurement of liquid flow through 90° V-notch wiers can now be graphically recorded on a non-linear chart developed for use with the Stevens Type F Recorder. A similar chart records liquid flow over various sizes of Parshall flumes. Interpolation or reference to conversion tables is not necessary. Request *Bulletin* 24 and sample of new chart No. F-8.

Installs, Renews Pipe Under Pavement

442 With a Trojan pipe puller & pusher on the job, you'll be able to install or renew pipe under pavement in record time. Continuous action, which eliminates resetting of grip, is the key. For details, write THE TROJAN MFG. CO., 1113 RACE DRIVE, TROY, OHIO.

Hard-Working Tamper

443 Up to 2400 hard-hitting impacts per minute are delivered by the Truco Model THT hydraulic tamper, a lightweight aluminum tool that works off existing vehicle hydraulic systems and tamps ground firmly in all types of soils. Write TRUCO/DENVER, 3963 WALNUT ST., DENVER 5, COLO.

Planning a Street Lighting Program?

444 Then this free guide to planning and promoting street lighting programs will be of value. "A Bright City Is a Safe City" contains charts, tables on traffic volume, light intensities, pole spacing, etc., and illustrates relighting projects of specific communities. Write KERRIGAN IRON WORKS CO., DEPT. A-9, NASHVILLE, TENN.

Redesigned Backhoe

445 These backhoes have been improved to deliver extra power, reach, digging depth, maneuverability and durability. Newly incorporated features that help you get the job done more quickly, more efficiently are explained in current literature; write WINDSOR PIPPIN CORP., WINDSOR, VT. Ask also for information on Pippin angledozers, bulldozers, new hydraulic winch, new stump remover, snow removal equipment.

Rugged Air Compressor

446 This unit operates two 85-pound paving breakers simultaneously, delivering 125 cfm at 1165 rpm. Low in both initial and operating cost, it's also easy to maintain. It's one in the complete line of air compressors offered by GORDON SMITH & COMPANY, INC., BOWLING GREEN, KY. Literature on request.

Embossed Street-Name Signs

447 Strong, durable, readable sums up the basic characteristics of the street name and traffic signs described in current literature available from THE MIRO-FLEX CO., INC., 1824 E. SECOND ST., WICHITA 14, KANS. For full facts, send for current catalog.

Rate Controllers

448 Bulletin describes a rate control system that can be used with venturi tubes, flow tubes, flow nozzles or orifice plates and operates at peak efficiency on either backwash or filter effluent or filter surface sand wash systems. Write BAILEY METER CO., 1035 IVANHOE RD., CLEVELAND 10, OHIO.

Carries Larger Loads at Less Cost

449 GAR WOOD INDUSTRIES, INC., WAYNE, MICH., has prepared a booklet on the Load-Packer 600 refuse collection body and includes in it six major reasons why this unit is able to haul larger loads at less cost per load.

Midget Electronic Leak Detector

450 The new, highly-sensitive Model ML-61 detects all types of water leaks under dirt, pavement, concrete, wood and other surfaces rapidly and with pinpoint accuracy. Complete information available from the GOLDAK CO., INC., 1544 W. GLENOAKS BLVD., GLENDALE 1, CALIF.

Power for Tools, Foodlights, Rescue Gear

451 Quick-starting, rugged, dependable portable and stand-by electric plants that answer the needs of volunteer and municipal fire departments for independent power are the subject of illustrated *Folder* K-3. For a copy, write KOHLER CO., KOHLER, WIS.

Aeration and Clarification Equipment

452 Technical bulletins from DORR-OLIVER INC., STAMFORD, CONN., give full details on four advanced developments for the activated sludge process. *Bulletin* No. 7318 covers the D-O Inka Aeration Ssytem; *Bulletin* No. 7316, the D-O Aerator; *Bulletin* No. 7314, the Dorr-Oliver Spirovortex System; *Bulletin* No. 6194, the Dorr RSR Clarifier.

Light Pick-Up Pumps

453 New descriptive *Bulletin* CP1-28 details a new line of engine and electric powered self-priming, light pick-up centrifugal pumps in ¾ inch and 1 inch sizes. Features, specifications, applications, models included. Write RICE PUMP AND MACHINE CO., BELGUIM, WIS.

Volumetric Feeding of Fluoride Compounds

454 *Bulletin* Ref. No. 23-02.20-2 describes methods and equipment for accurate, continuous, volumetric feeding of fluoride compounds to a water treatment system. It can be obtained from B-I-F INDUSTRIES, P. O. BOX 276, PROVIDENCE 1, R. I.

Vertical, Enclosed-Shaft Non-Clog Pumps

455 These VSC pumps are designed for sewage, sump or storm water service in municipal, institutional, industrial and commercial applications with capacities from 50 to 5000 gpm and heads to 105 feet. CHICAGO PUMP, 622 DIVERSEY PARKWAY, CHICAGO 14, ILL., introduces them in *Bulletin* 124-G.

Rugged Rotary Cutter

456 The Cyclone Model CY-60 is a heavy-duty cutter designed for use on highway right-of-ways and parks. It's recommended for cutting brush up to 3 inches in diameter. Available in lift or pull type. Write SERVIS EQUIPMENT CO., BOX 1590, DALLAS, TEXAS.

Electric-Powered Excavator

457 *Bulletin* L-1164 supplies details and specifications on the new electric-powered 105E excavator designed for high-capacity loading indoors and underground. Write THE EIMCO CORP., P. O. BOX 300, SALT LAKE CITY 10, UTAH.

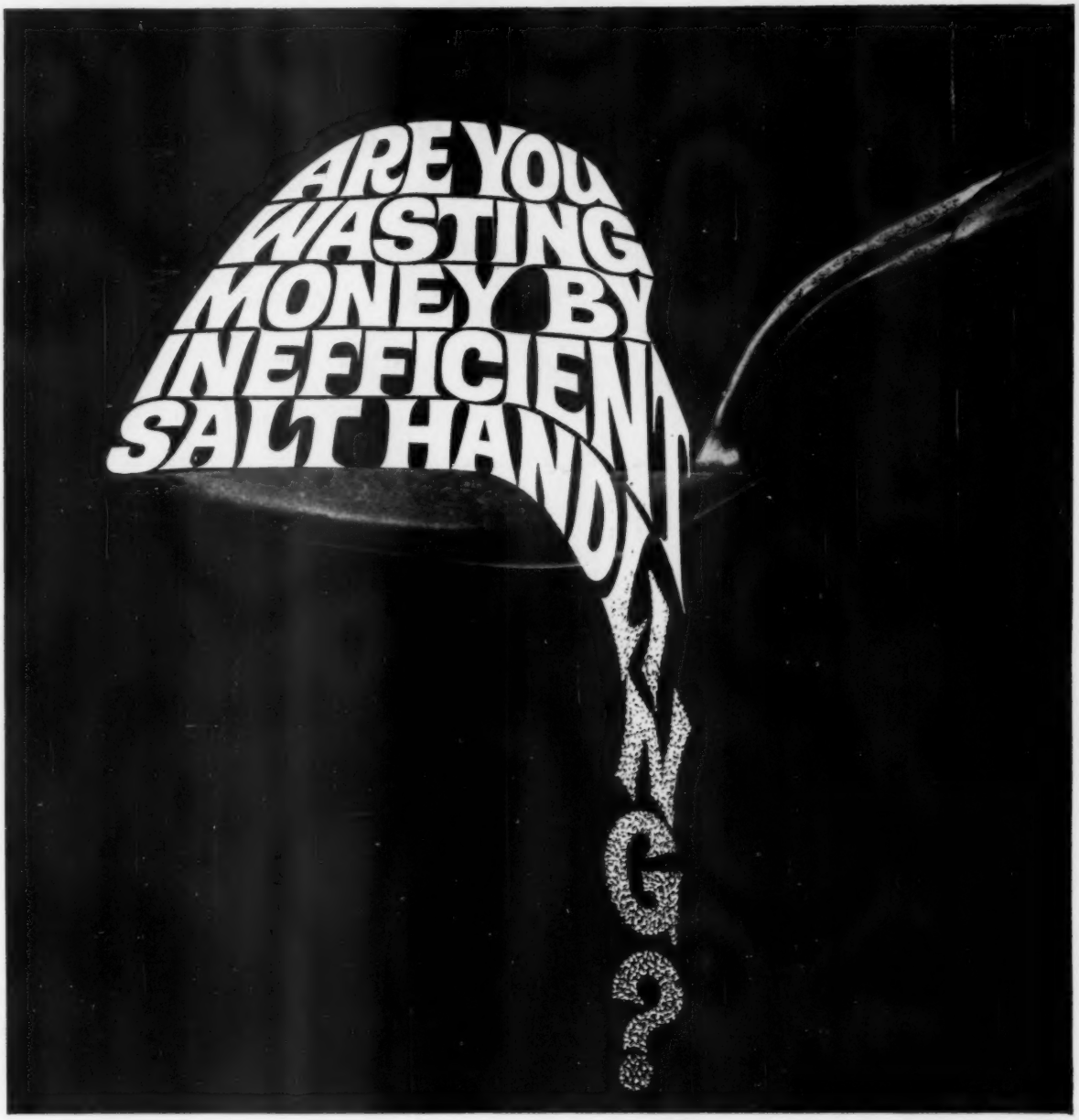
Police Car-Duty Jacket

458 This less-than-30-ounce, windproof and water repellent jacket was developed for the Indiana State Police and adopted as standard specification for the Chicago Police Car Police. For details, write GERBER MFG. CO., INC., MISHAWAKA, IND.

Diesel Power

459 *Catalog* BU-768 reports on a new series of diesel engines and electric sets for crushing and asphalt plants. Illustrations show important components of engine and combustion chamber. For copy, write ALLIS-CHALMERS MFG. CO., ENGINE-MATERIAL HANDLING DIV., MILWAUKEE 1, WIS.

(See page 59 for more Bulletins)



LET MORTON SALT COMPANY SPECIALISTS IN SALT ADVISE YOU WITHOUT COST OR OBLIGATION! Nowadays there are almost as many ways of handling salt as there are companies using it.

Obviously some are more efficient than others. But often it takes a real expert in materials handling to know which of two or three methods is *most* efficient.

Because of its multiplant operations from coast to coast, Morton Salt Company has gained wide experience in all phases of salt handling. Today Morton maintains a department whose sole function is to advise on salt handling problems. There is no cost or obligation whatsoever for this service.

Just fill out and mail the coupon at right, and you will be contacted soon! Do it now—it may mean considerable savings plus increased efficiency for you!

ANOTHER SERVICE OF MORTON
THE ONLY NATION-WIDE SALT COMPANY
FILL OUT THIS COUPON NOW

Yes, I am interested in ways to save money in handling salt.

NAME_____

COMPANY_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

MORTON SALT COMPANY

INDUSTRIAL DIVISION

Dept. AC9, 110 N. Wacker Drive, Chicago 6, Ill.

Flexible presents 3

Before you invest important money in sewer rodding equipment, investigate these three fine new machines. As in the past, Flexible has taken proven and tested design principles, and added important new features to give you the best equipment for any job.

As a manufacturer of all types of rodding machines, Flexible is in a position to offer you **any** type without partiality. The work to be performed is the determining factor for most satisfactory machine selection.

Now! A simplified continuous rodder free from slippage when the going gets heavy, with the exclusive advantage of the proven Safety Overload Clutch. NO FRICTION ROLLERS TO SCORE OR BURN. Traveling cams positively push or pull the rod, gripping tighter when the load increases. Unequaled design permits cams to rotate with the rod, in either direction. For 1/4, 5/16, 11/32 or 3/8-in. continuous rod. Holds up to 2000 ft.

new!
1961
SEWERODER
PATENT NO. 2,544,256

Built with the ruggedness and reliability of the full-size SeweRodeR, this new Compact is 15 inches shorter and priced to fit economy budgets. Uses 39-in. rods driven by hardened steel dogs on positive dual chain drive. Two-wheel tow with caster type wheel at front; 7 hp engine; reel capacity 750 ft. of rod.

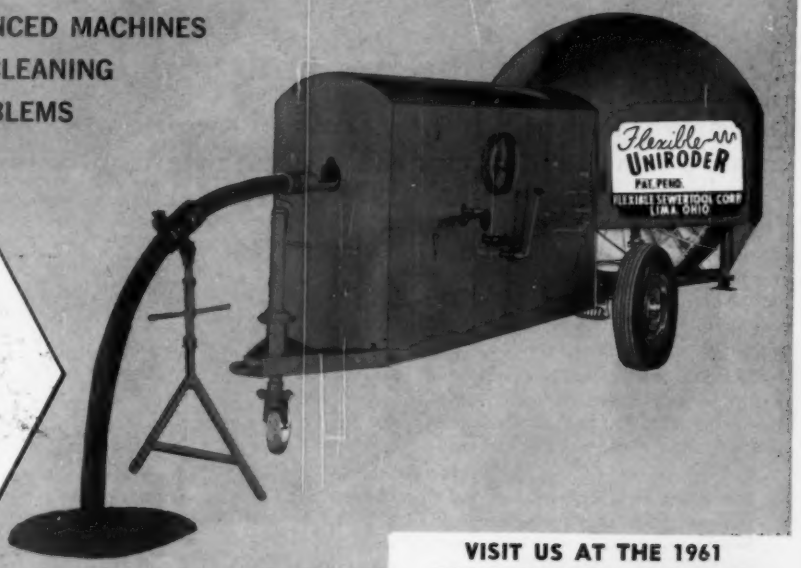
WRITE TODAY FOR FREE CATALOG!

FLEXIBLE INC.

415 S. ZANGS BLVD., DALLAS, TEXAS

new rodding machines!

1961's MOST ADVANCED MACHINES
FOR YOUR SEWER CLEANING
AND RODDING PROBLEMS



new!

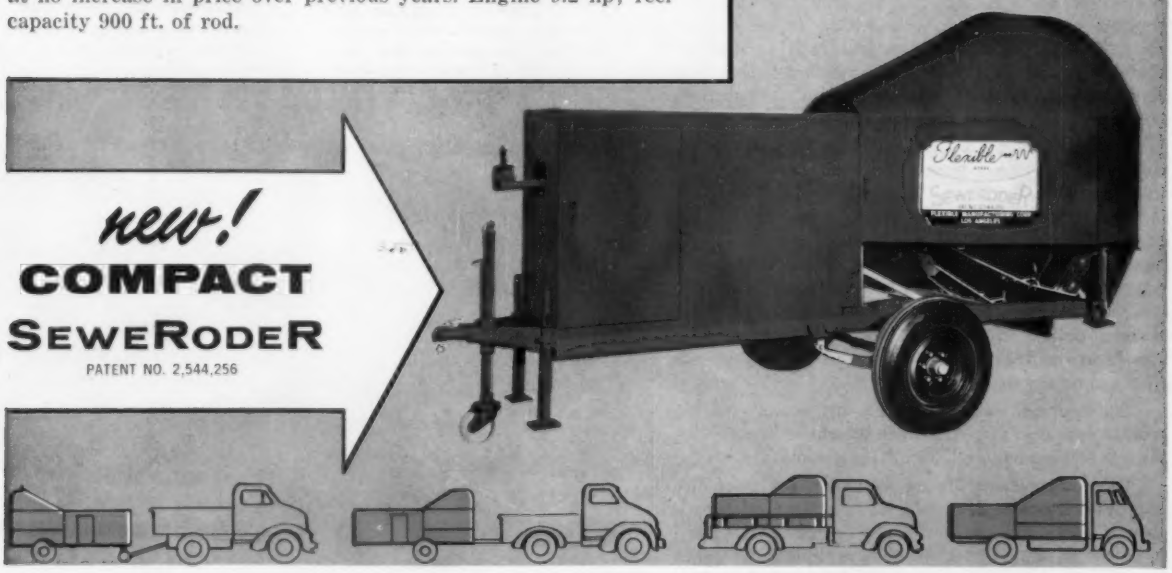
CAM DRIVE
UNIRODER
PAT. PENDING

VISIT US AT THE 1961 PUBLIC WORKS CONGRESS, SPACE A-46, SEPT. 24-27

Now features 48-in. rods providing extra operational economies. Twice as many drive dogs on new longer dual chain drive for faster, smoother, positive power. These and other redesign features make it the greatest performer on the market today... all at no increase in price over previous years. Engine 9.2 hp; reel capacity 900 ft. of rod.

new!

COMPACT
SEWERODER
PATENT NO. 2,544,256



FACTORIES AT LIMA, OHIO AND LOS ANGELES, CALIFORNIA

AMERICAN LAFRANCE

Leadership

Combines superior product design and life-long service

Important Extra Value features in American LaFrance Fire Apparatus assure longer life, less maintenance and greater safety in operation.

THE AMERICAN LAFRANCE 900 Series fire apparatus represent years of experience (we are in our 127th year) in the design and production of fire fighting equipment. The 900 Series is the finest in appearance and quality of materials that competent engineers and skilled craftsmen can produce.

The 900 Series includes important features not illustrated that contribute to the excellence of these American LaFrance fire engines and aerial ladder trucks. Some of these Extra Values are:

Cab-ahead-of-engine design for maximum safety and visibility for driver and crew. 5-man seating. Four way adjustable driver's seat. Short turning radius and easy steering.

The chassis frame is a deep section pressed steel channel with all welded cross members for maximum load carrying capacity with minimum deflection.

Engine cooling system is pressurized (4 p.s.i.) for efficiency and operation without loss of water or anti-freeze.

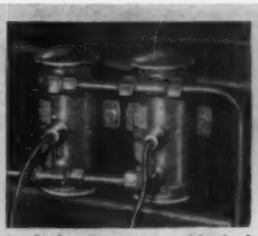
Six large enclosed compartments for weatherproof protection of equipment. Side compartments are "bolted-on" construction with sealing at all contact surfaces to prevent corrosion from salt solution so commonly used on today's highways and streets. This sealing cannot be done with "welded on" construction.

The TWINFLOW pump is built by American LaFrance and includes such features as single packing, adjustable, no special tools required; Bearium metal (high lead bronze) seal rings at the eye of each impeller; front bearing of Bearium metal, will not seize or score; impellers are in both static and dynamic balance for vibration free operation. Discharge gates are full flow (2½ inch waterway) ball type quarter turn with locking handle. The ball is hard chrome plated to eliminate corrosion and scoring. The American LaFrance discharge gates always work freely at any pressure.

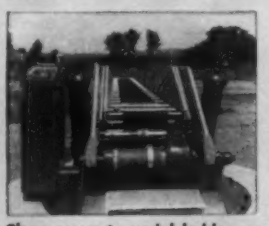
Six engine sizes (215 b.h.p. to 330 b.h.p.) provide a wide range in engine power selection. In addition, the gas turbine engine (330 b.h.p.) is available.

The long service life of American LaFrance fire engines is a matter of record. Several hundred American LaFrance fire engines over 40 years old are still in active service. All service requirements, both maintenance and parts, are available from American LaFrance.

Direct double acting shock absorbers at rear provide maximum safety. Prevents roll on turns.



Dual electric pumps, with dual fuel lines, one to mechanical pump, prevent vapor lock and insure continuous fuel supply.

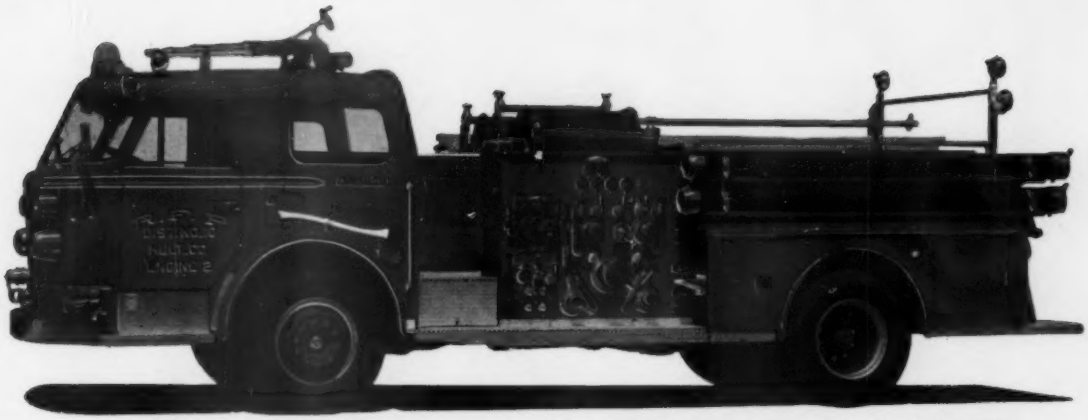


Clear access to aerial ladder—no tubes to climb over when ascending or descending ladder.

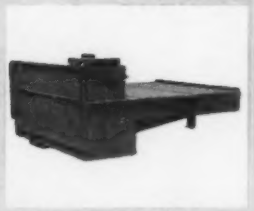
Turntable bearing rings 65 inches diameter for maximum ladder stability and control.

MODEL 4-85 aerial. Optional extra features shown: Federal Model Q2B Siren; Federal Beacon-Ray light; 200 gallon water tank and booster pump; rear electric hose reel; enclosed compartments

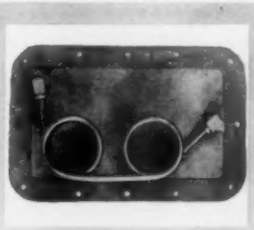
• See the AMERICAN LAFRANCE Fire Engines at the I.A.F.C. conference,



METROPOLITAN — 1250 g.p.m. Class A pumper. Also ALFCO 4 stage high pressure pump: Optional extras shown: front suction, 2½ inch; Akron deluge gun on cab roof; 110 volt outlets; Fyr-Fyter penetrator siren; rear red lights; Federal Beacon-Ray light; one extra booster reel and hose; two gated suction inlets; pressure gauges each outlet.

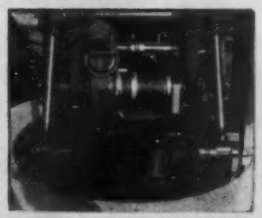


500 gallon water tank has sloping bottom, deep outlet sump, removable covers and is Zinc-late treated.



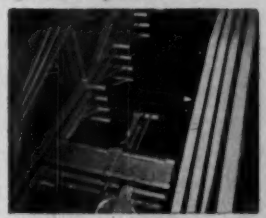
Cooling coils in pump transmission insure proper lubrication under all operating conditions.

Chassis springs have second leaf wrapped around eye as safety feature. All springs chrome manganese alloy steel.

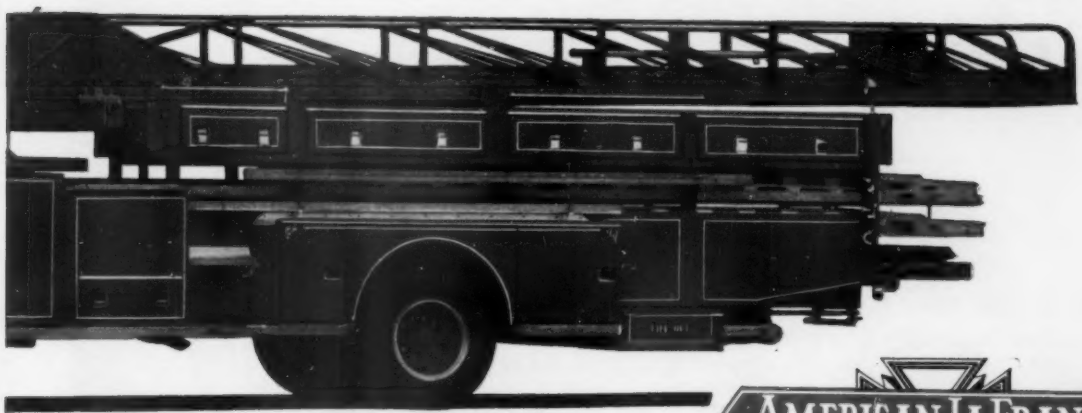


Clean design of turntable with no piping or rubber hose. By-pass valve in extension circuit easily accessible.

All controls directional. Visual indicators automatically register man load for all operating conditions.



Turnbuckles are provided for adjustment of each cable. Nothing to disconnect.



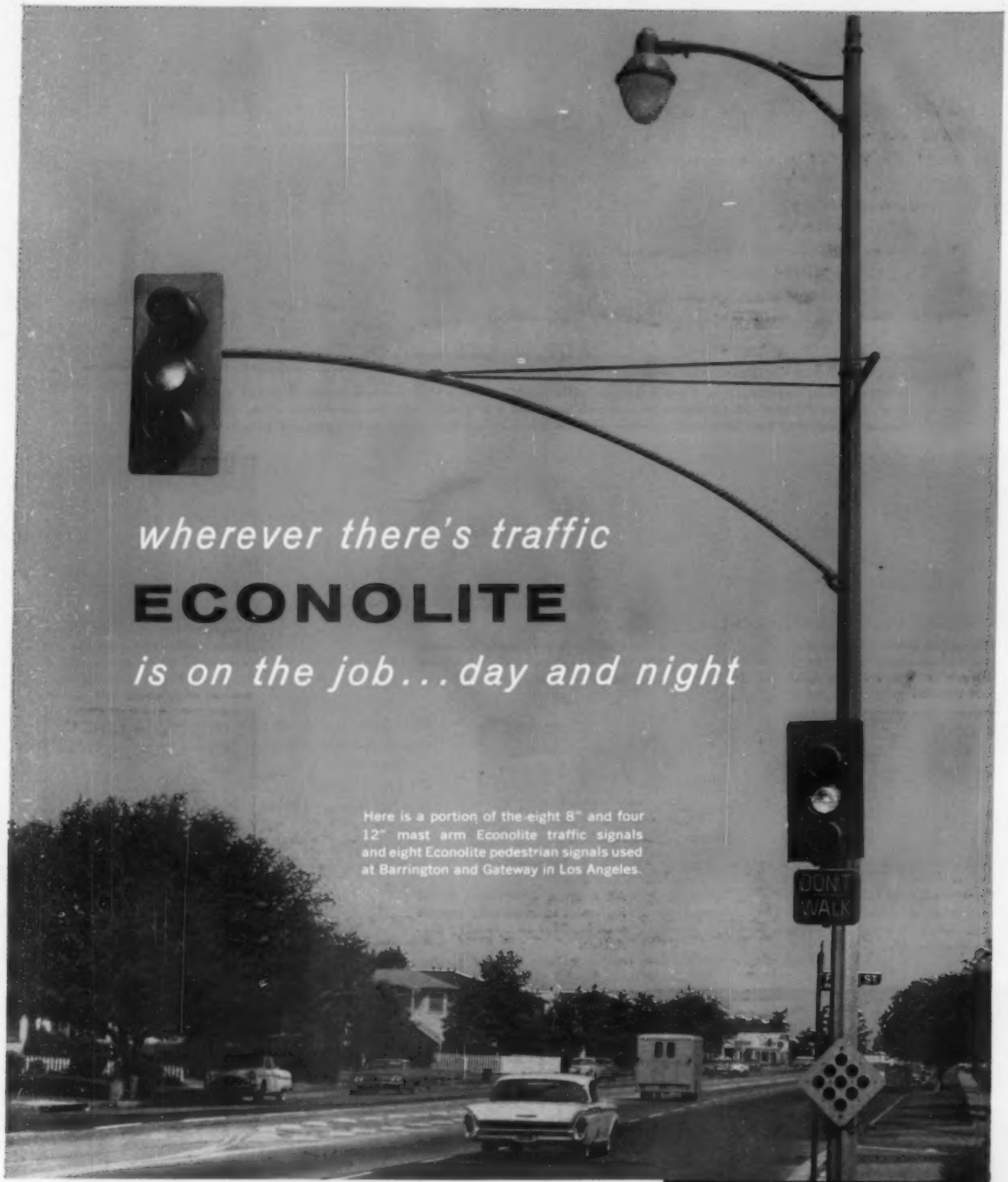
over ground ladders; wood ground ladders; 6 ft. pike pole on aerial ladder; side tool compartment; marker lights; Fi-Tronics communication system on aerial ladder and control tower.

AMERICAN LAFRANCE
A DIVISION OF STERLING PRECISION CORPORATION
ELMIRA, N.Y.

LaFrance Export Corporation
Elmira, N.Y.

LaFrance Fire Engine and Foamite, Ltd.
Toronto 18, Ontario, Canada

Las Vegas, Sept. 25-29



Here is a portion of the eight 8" and four 12" mast arm Econolite traffic signals and eight Econolite pedestrian signals used at Barrington and Gateway in Los Angeles.

THE CITY OF LOS ANGELES

is doing everything possible for drivers and pedestrians. Many Econolite traffic and pedestrian signals and controls are used in directing and controlling the flow of traffic throughout this large metropolis. Likewise cities both small and large in all parts of the United States and many foreign countries use Econolite. No matter what your traffic problem, write for detailed information.

ECONOLITE CORPORATION

Factory and general offices
8900 Bellanca Avenue
Los Angeles 45, California

If you need information on any type of municipal service or equipment, these reply cards will get action in a hurry.

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410	424	438	452	466	480	494	508	527	541	555	570
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412	426	440	454	468	482	496	510	529	543	558	572
413	427	441	455	469	483	497	511	530	544	559	
414	428	442	456	470	484	498	512	531	545	560	
415	429	443	457	471	485	499	518	532	546	561	
416	430	444	458	472	486	500	519	533	547	562	
417	431	445	459	473	487	501	520	534	548	563	
418	432	446	460	474	488	502	521	535	549	564	
419	433	447	461	475	489	503	522	536	550	565	
420	434	448	462	476	490	504	523	537	551	566	
421	435	449	463	477	491	505	524	538	552	567	
422	436	450	464	478	492	506	525	539	553	568	
423	437	451	465	479	493	507	526	540	554	569	

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414	428	442	456	470	484	498	512	531	545	560	
415	429	443	457	471	485	499	518	532	546	561	
416	430	444	458	472	486	500	519	533	547	562	
417	431	445	459	473	487	501	520	534	548	563	
418	432	446	460	474	488	502	521	535	549	564	
419	433	447	461	475	489	503	522	536	550	565	
420	434	448	462	476	490	504	523	537	551	566	
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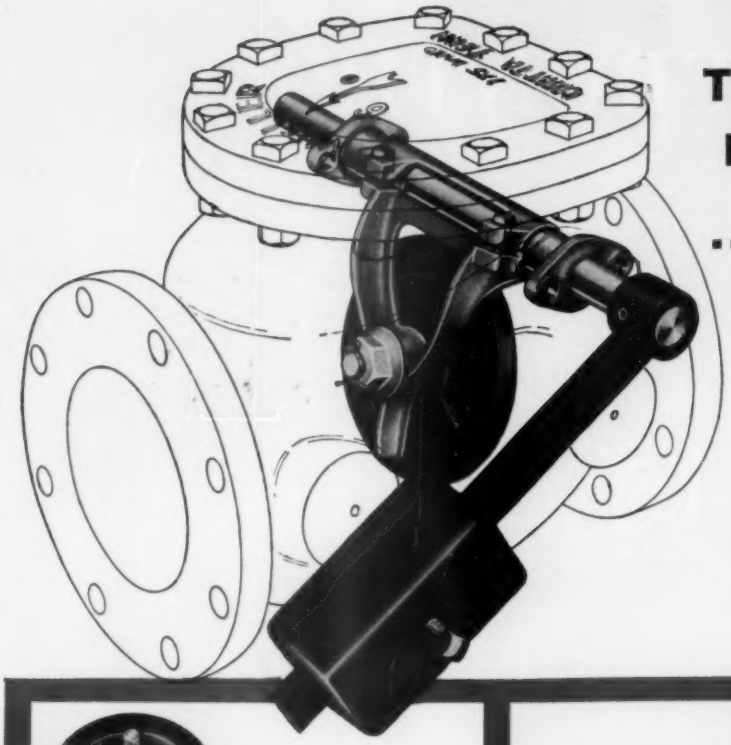
Save time and effort by using these reply cards when you want additional information on any product or service mentioned or advertised in this issue.



THERE IS A BIG DIFFERENCE*

...and the difference is MUELLER® QUALITY

Compare the parts of a Mueller heavy-duty Check Valve with those of conventional check valves. In each comparison, Mueller parts are either larger, more accurately manufactured or of higher strength materials.

The result is longer service life and more dependable operation without maintenance.

The Heavy-duty Check Valve is typical of the extra care, extra quality built into every Mueller product.

MUELLER CO.
DECATUR, ILL.

Factories at: Decatur, Chattanooga, Los Angeles
In Canada: Mueller, Limited, Sarnia, Ontario

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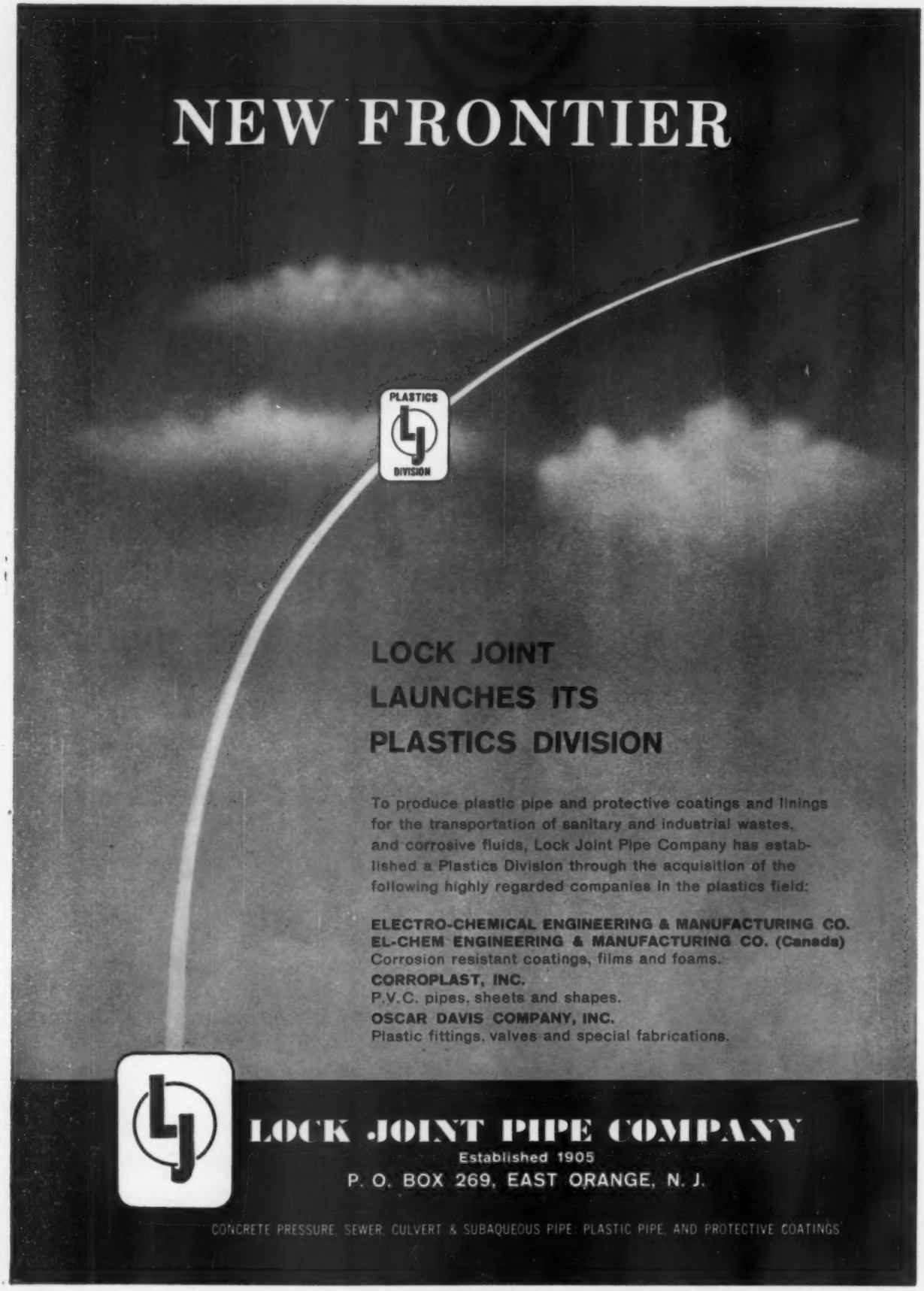
NEW FRONTIER



LOCK JOINT LAUNCHES ITS PLASTICS DIVISION

To produce plastic pipe and protective coatings and linings for the transportation of sanitary and industrial wastes, and corrosive fluids, Lock Joint Pipe Company has established a Plastics Division through the acquisition of the following highly regarded companies in the plastics field:

ELECTRO-CHEMICAL ENGINEERING & MANUFACTURING CO.
EL-CHEM ENGINEERING & MANUFACTURING CO. (Canada)
Corrosion resistant coatings, films and foams.
CORROPLAST, INC.
P.V.C. pipes, sheets and shapes.
OSCAR DAVIS COMPANY, INC.
Plastic fittings, valves and special fabrications.

LOCK JOINT PIPE COMPANY

Established 1905

P. O. BOX 269, EAST ORANGE, N. J.

CONCRETE PRESSURE, SEWER, CULVERT & SUBAQUEOUS PIPE; PLASTIC PIPE, AND PROTECTIVE COATINGS

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Litter Baskets Built to Last

460 These rugged litter baskets are low cost, durable, weatherproof and galvanized. When strategically placed throughout your community they encourage city cleanliness. Details and specifications from DESIGNERS METAL DIVISION OF SOUTHERN ELECTRIC, INC., 8701 S. GREENWOOD AVE., CHICAGO 19, ILL.

Trees for Streets and Parks

461 Hardy varieties of trees that will add color and beauty to your municipality are available from THE COLE NURSERY CO., PAINESVILLE, OHIO. Why not find out about these plantings that grow in almost any soil and require relatively little maintenance?

New, Highly-Mobile Asphalt Plant

462 You can learn about a new, highly-mobile continuous-type asphalt plant in a bulletin available from BARBER-GREENE COMPANY, AURORA, ILL. It is said to be extremely portable, quickly erected, has automatic operation, high capacity production, and accurate control. Write for your copy.

Thickens, Dewaters Sludge

463 *Technical Bulletin* RP 100 explains how the "Roto-Plug" Concentrator thickens and dewaters sewage sludge without use of chemicals. For a copy write NICHOLS ENGINEERING & RESEARCH CORP., 80 PINE ST., NEW YORK 5, N. Y.

Long-Lasting Traffic Paint

464 This paint is easily applied with paint spray, brush, or marking machine. It's quick-drying, available in economical 6-gallon cans, and can be used on asphalt, brick, concrete, macadam, cobblestone. Write NATIONAL CHEMSEARCH CORP., 2417 COMMERCE ST., DALLAS, TEXAS for more information.

Designed for Municipal Mowing

465 There are 38 models in the Hammer-Knife line of mowers, from 18-inch to 19-foot gangs—a model to meet every municipal need. Complete-line literature gives full facts, specifications, applications. Write MOTT CORP., P. O. BOX 278-10, LA GRANGE, ILL.

Sweeps, Picks-Up, Loads

466 . . . that's the Mars Pick-Up Sweeper, which attaches to all popular front-end loaders and executes all three actions in one operation. It's ideal for small communities, airports, shopping centers, etc. Full details available from MARS INDUSTRIES, INC., 5209 BROADWAY, MINNEAPOLIS 22, MINN.

What's In A Parking Meter?

467 THE KARPARK CORP., STARKVILLE, MISS., can tell you what's in its Twin-O-Matic and Unimatic parking meters and why these units meet all requirements for low-cost, efficient municipal parking control.

It Pays to Replace Older Equipment

468 . . . is the title of a new 8-page Booklet, D110, available from ADVERTISING DIV., CATERPILLAR TRACTOR CO., PEORIA, ILL. It shows how improvements in today's 235-hp D8H and 140-hp D7D are resulting in greater profits for owners.

Lightweight Compressor

469 Here's a machine that operates a 3/16 sand nozzle or 2 clay spades, or 80-pound paving breaker, or 3 tampers, and uses only 1½ gallons of gas per hour. For literature on Porta-Air "75," write INDUSTRIAL COMPRESSOR DIV., GENERAL SUPPLY CO., 1920 McGEE TRAFFICWAY, KANSAS CITY, MO.

New Voting Machines

470 SEISCOR, a division of SEISMOGRAPH SERVICE CORP., BOX 1590, TULSA, OKLA., has introduced a new voting machine with vertical ballot and with capacity for 480 candidate spaces. Available literature gives full details.

Profitable Parking

471 MAGEE-HALE PARK-O-METER CO., 3909 WILLOW SPRINGS RD., OKLAHOMA CITY, OKLA., will be glad to show you how to turn your municipally-owned and operated parking system into a profitable, revenue-producing system.

Snow, Ice a Problem?

472 Then you'll want up-to-date literature on the "jet" Spreader, designed to deliver fast, efficient ice control and available in many sizes and styles. Write GOOD ROADS MACHINERY CORP., MINERVA, OHIO.

Auger-Type Ice Control Body

473 *Bulletin* A-464 includes photographs and texts on all components of the new A1-SC ice control body, which is easily installed on any height dump truck, spreads salt, sand or cinders on ice or snow covered streets in any desired pattern up to 60 feet wide. Write BAUGHMAN MFG. CO., JERSEYVILLE, ILL.

Pneumatic Sewage Ejector

474 Latest catalog on pneumatic sewage ejector systems for municipalities available from BLACKBURN-SMITH MFG. CO., 65 GARDEN ST., HOBOKEN, N. J., gives full specifications and description and shows why these units provide simple, low-cost installation and operation.

Hydraulic Tailgate Spreader

475 This unit spreads salt, sand and seal coating materials in widths varying to a maximum of 40 feet. It's one-man operated with cab controls and is completely independent of tailgate. Hydro-Spreader *Bulletin* H-4 gives full facts. Write CENTRAL ENGINEERING CO., INC., 4429 W. STATE ST., MILWAUKEE 8, WIS.

Construction Castings

476 Catch basin inlets, roll-type curb-inlets, manhole covers, catch basin covers—you'll find these top quality castings and more in current literature available from BRILLION IRON WORKS, INC., BRILLION, WIS.

Truck Generators

477 DELCO-REMY DIVISION OF GENERAL MOTORS, ANDERSON, IND., offers literature on its complete line of A.C.-D.C. extra-output generators and regulators that can be job-matched to meet the electric power needs of trucks in municipal service.

Cutting Costs on Cast Iron Pipe

478 "Mechanized System Breaks Tradition to Cut Costs" is a booklet describing how a new producer of cast iron pipe employs modern pipe handling techniques to reduce costs and obtain better quality control. Customer benefits include palletized pipe, making possible rail shipments by flatcar which to date has assured freedom from accidental damage in transit. A series of photographs shows how palletized pipe has resulted in several new pipe handling methods designed to save the customer money, depending upon facilities available. Learn how cost-conscious municipal officials have measured the difference in dollars and cents. Get the complete story by writing GRIFFIN PIPE DIVISION, 2601 NINTH AVE., COUNCIL BLUFFS, IA.

These Graders Work and Travel Fast

479 LW Adams graders are designed to help you save money, time and effort on your grading jobs. Current catalog tells you how they do it; also gives specifications, accessories and optional equipment. Write LETOURNEAU-WESTINGHOUSE CO., PEORIA, ILL.

Present Your Municipal Exhibits In the Best Light

480 Time-Tight exhibit cases that protect as well as display your municipal exhibits to best advantage are the subject of a catalog from THE MICHAELS ARTBRONZE CO., P. O. BOX 668-MI, COVINGTON, KY. Dimensions, styles, types of lighting, etc. included.

Plastic Light Globes Lower Costs

481 Light globes of tough, durable Tenite Butyrate have sent costs downward for New York City; replacement rate has been cut by 60%. For details on this and other applications of this plastic, write EASTMAN CHEMICAL PRODUCTS, INC., KINGSPORT, TENN.

Aluminum Highway Sign Spans

482 You can save a great deal of time by checking *Brochure* BT-1, which is chock full of information, illustrations and charts for stock aluminum sign spans to carry from 100 to 600 square feet of signs. Write PFAFF & KENDALL, 84 FOUNDRY ST., NEWARK 5, N. J.

Traveling Grate Incinerator Stokers

483 Both small and large cities will be interested in details of this type of incinerator stoker, which is designed for rapid, complete and continuous processing of mixed combustible refuse. For details, write COMBUSTION ENGINEERING, 200 MADISON AVE., NEW YORK 16, N. Y.

New Low-Head-Loss Flow Tube

484 PENN METER CO., 4110 HAVERFORD AVE., PHILADELPHIA 4, PA., has announced new 4-page *Catalog* No. 405, which describes the company's "Lo-Loss" Flow Tube. Technical data, performance comparison curves, and cut-away drawings illustrate this new product.

Why Fight Snow

485 . . . when you can remove it quickly, easily, efficiently by using power hydraulic controls that lift and lower snow plows with a flick of the wrist from the cab? For illustrated folder, write MONARCH ROAD MACHINERY CO., 1331 MICHIGAN ST., N. E., GRAND RAPIDS 3, MICH.

Self-Propelled Tamping Roller

486 Ferguson Model SP-84 is specially suitable for street widening operations, alley work, parking areas—wherever it's necessary to work in close quarters. It's equipped with 5-speed quickly reversible transmission. Write SHOVEL SUPPLY CO., INC., P. O. BOX 1369, DALLAS 21, TEXAS.

New Tractor Shovel

487 An improved series "B" version of the Hough H-30 4-wheel-drive "Payloader" tractor-shovel is now equipped with a 1¼ cubic yard bucket, which adds 25% more capacity. Available with gasoline or diesel power. Write THE FRANK G. HOUGH CO., 710 SEVENTH AVE., LIBERTYVILLE, ILL.

12-Volt Swimming Pool Lamp

488 A powerful, 12-volt underwater lamp that meets safety requirements for the use of electrical equipment at swimming pools is rated at 500 watts and throws a 20,000-beam-candlepower flood of light under water. It's 8 inches in diameter. For details, write GENERAL ELECTRIC CO., NELA PARK, CLEVELAND 12, OHIO.

(See page 61 for more Bulletins)

HANDLE WITH CARE

That's the treatment your water well gets when you call Halliburton for Acidizing Services.

CARE in helping you select the proper type and strength of acid.

CARE in placing the acid solution at the proper rate and pressure.

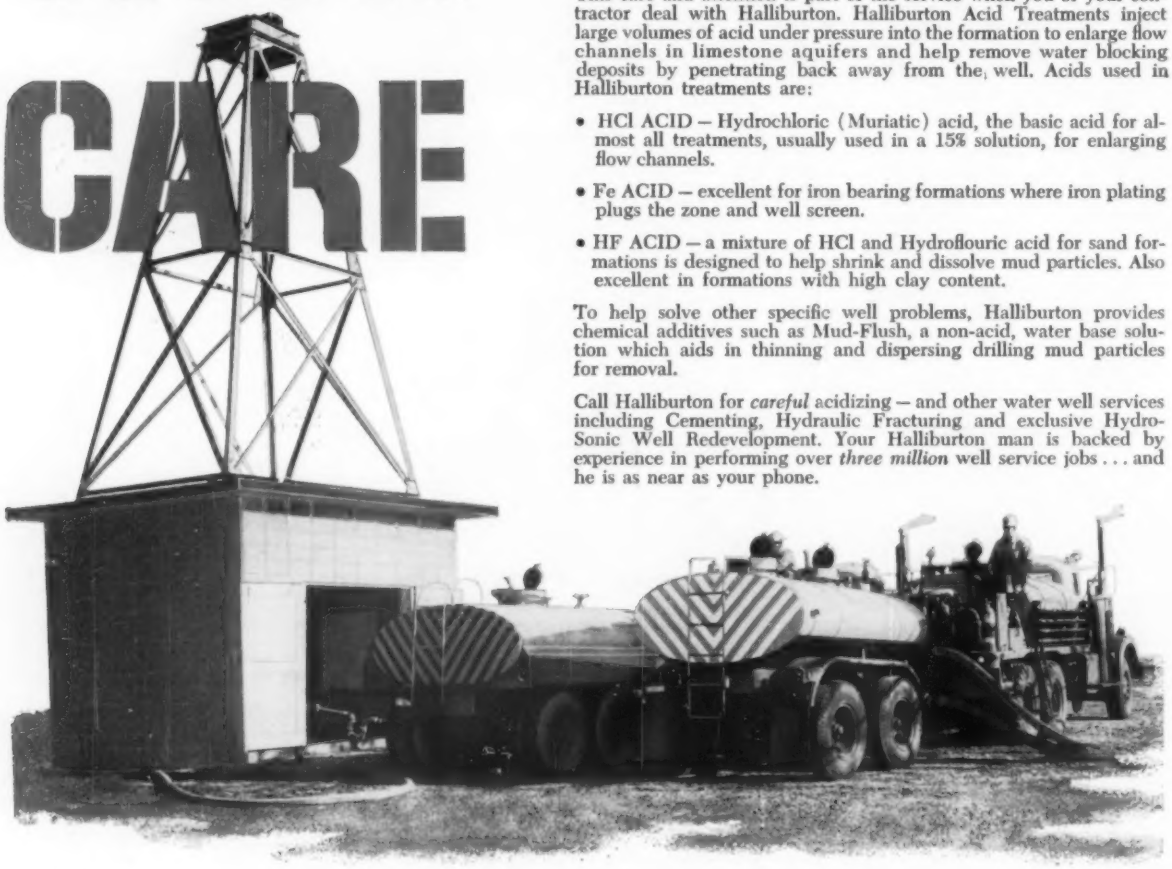
CARE in performing a truly professional well treatment all around — *and at a reasonable price!*

This care and attention is part of the service when you or your contractor deal with Halliburton. Halliburton Acid Treatments inject large volumes of acid under pressure into the formation to enlarge flow channels in limestone aquifers and help remove water blocking deposits by penetrating back away from the well. Acids used in Halliburton treatments are:

- HCl ACID — Hydrochloric (Muriatic) acid, the basic acid for almost all treatments, usually used in a 15% solution, for enlarging flow channels.
- Fe ACID — excellent for iron bearing formations where iron plating plugs the zone and well screen.
- HF ACID — a mixture of HCl and Hydroflouric acid for sand formations is designed to help shrink and dissolve mud particles. Also excellent in formations with high clay content.

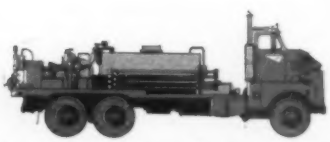
To help solve other specific well problems, Halliburton provides chemical additives such as Mud-Flush, a non-acid, water base solution which aids in thinning and dispersing drilling mud particles for removal.

Call Halliburton for *careful* acidizing — and other water well services including Cementing, Hydraulic Fracturing and exclusive Hydro-Sonic Well Redevelopment. Your Halliburton man is backed by experience in performing over *three million* well service jobs . . . and he is as near as your phone.



Dedicated through research and performance to better service for America's water wells

WATER WELL SERVICES



All Halliburton Services are performed under a contract containing a limited liability provision.

Halliburton
COMPANY • DUNCAN, OKLAHOMA

Here is Your Opportunity to Improve Conditions in Your City

These free catalogs will supply many new ideas for municipal money saving.

Write to address given or circle corresponding number on free post card on page 55.

Stops Rust with Color—Free Sample

489 A new catalog on New Color Horizons System and Rust-Oleum systems includes color charts and application. It is available from RUST-OLEUM CORP., 2985 OAKTON ST., EVANSTON, ILL., along with free test sample of Rust-Oleum 769 Damp-Proof red primer.

Financing Assistance for Municipalities

490 Need a trustee or fiscal agent for revenue bonds? Why not ask THE CHASE MANHATTAN BANK, CORPORATE TRUST DIVISION, 1 CHASE MANHATTAN PLAZA, NEW YORK 15, N. Y. You'll be certain to get the skill, experience and high level efficiency to properly assist you.

Outdoor Vacuum Cleaner

491 Large and powerful, this outdoor vacuum cleaner sucks up trash, litter, paper cups and plates, leaves, cigarette butts, etc., from concrete hard top, lawn or gravel surfaces. HANDLING DEVICES CO. INC., 34 CONCORD LANE, CAMBRIDGE 38, MASS., can tell you all about the Plantman Dynavac.

Water, Sewage Analyzing Equipment

492 Many new and improved instruments for water and sewage analysis are to be found in *Catalog* No. 62A, a 132-page collection of products for water, public health, and industrial laboratories. For copy, write HELLIGE INC., 877 STEWART AVE., GARDEN CITY, N. Y.

All-Weather Track and Field Runways

493 Grasstex provides an all-weather surface that is smooth, uniform, skid-free. It's said to be ready for use within minutes after rain. *Bulletin* B-29 includes photographs of installations, technical data on track construction, descriptions of laboratory tests proving Grasstex's advantages. Write AMERICAN BITUMULS & ASPHALT CO., 320 MARKET ST., SAN FRANCISCO 20, CALIF.

Stops Leaks, Repairs Pipe Splits

494 *Booklet* No. 220-BMI explains how easy it is to snap and bolt an Adams Pipe-Saver repair clamp around water, steam, gas and oil lines (especially steel pipe) to stop leaks instantly, completely, permanently. Write ADAMS PIPE REPAIR PRODUCTS, 2453 MERCED AVE., P. O. BOX 3367, SOUTH EL MONTE, CALIF.

Close-Coupled End-Suction Pump

495 AURORA PUMP DIVISION, THE NEW YORK AIR BRAKE CO., AURORA, ILL., announces the Type GBH pump with capacities that range up to 1600 gpm and heads to 330 feet. Design saves valuable space, permits fast installation, makes pumps suitable for OEM applications, cooling towers, boiler feed, condenser circulation etc.

Mechanizes Snow Removal

496 Want to expedite snow removal? Speed handling of anti-skid materials to improve wintertime street safety? A Wisconsin-powered snow loader can help you do it. For details on rugged engines in the 3 to 60 hp Wisconsin line and their applications to municipal equipment, write for *Bulletin* S-283. Write WISCONSIN MOTOR CORP., DEPT. U-11, MILWAUKEE 46, WIS.

Lasting Protection Against Corrosion

497 Bitumastic protective coatings, specially formulated to prevent corrosion of metal and deterioration of concrete and masonry, are presented in an 8-page catalog offered by KOPPERS COMPANY, INC., TAR PRODUCTS DIVISION, PITTSBURGH 19, PA. Properties, specification data, and recommended applications included.

Ford Police Vehicles

498 FORD DIVISION, FORD MOTOR CO., DEARBORN, MICH., offers 25 different police vehicles, each one suited to a special phase of police operations. A 12-page folder, "1961 Ford Police Cars," gives specifications, discusses engines, options, special features.

Introduces Diesel Tractors

499 Just off the M-F production line are the 203 and 205 series industrial diesel tractors. Both are powered by a 152 cubic inch 3-cylinder diesel engine which will deliver 12.5% more power than a 4-cylinder gasoline engine of comparable size. For full facts, write MASSEY-FERGUSON INDUSTRIAL DIVISION, 1009 S. W. ST., WICHITA, KANS.

Concrete and Asphalt Equipment

500 Current literature available from EQUIPMENT DEVELOPMENT CO., 2700 GARFIELD AVE., SILVER SPRING, MD., discusses gasoline or electric powered concrete grinders that grind rough slabs easily and quickly, and concrete and asphalt plane, Model CP-5, with adjustable 5-inch wide high-speed cutters.

Street Lighting Guide

501 In G-E's 1961 Designer's and Buyer's Guide to Preferred Lighting, you'll find many new products and all the information needed to select, apply, and order the 160 street lighting luminaires, controls, poles and brackets in the company's Preferred Lighting line. Write GENERAL ELECTRIC, OUTDOOR LIGHTING DEPT., HENDERSONVILLE, N. C.

Measures Water Accurately

502 Subject of *Catalog* B-31-D is the Thompson parshall measuring flume, for use in water and sewage treatment plants. Construction features, assembly, installation details, accessories, specifications, table of capacities, and free-flow discharge tables included. For copy, write THOMPSON PIPE & STEEL CO., 30TH and LARIMER STS., DENVER 1, COLO.

New Lighting Pole Catalogs

503 WELD-RITE CO., 4417 OAKPORT ST., OAKLAND, CALIF. announces publication of (1) "Steel Lighting Standards," a 28-page catalog containing photos and specifications on Weld-Rite standards for lighting freeways, streets, parking lots, etc.; and (2) "Flood Lighting Poles," a 12-page catalog covering poles for stadium flood lighting, playgrounds, driving ranges and security areas.

Summarizes Superior Engine Line

504 *Bulletin* 1151 reviews 26 models of 6 basic Superior engines. These engines span the horsepower range of 190-2150 BHP, with a choice of 6 or 8 cylinders, naturally aspirated or supercharged for low or medium speeds. Description and specifications of each engine are supplemented by references to other literature giving more comprehensive coverage of individual models. Write CUSTOMER SERVICE DEPT., WHITE DIESEL ENGINE DIVISION, SPRINGFIELD, OHIO.

Municipal Engineers

505 Here is a system that makes possible surveys with the speed of light. It's been successfully used by cities for re-mapping and redefining boundaries, highway construction, urban redevelopment and civil engineering work. AGA CORPORATION OF AMERICA, 2013 PARK AVE., P. O. BOX 447, SOUTH PLAINFIELD, N. J. will provide the facts.

Reliable Soil Samples at Low Cost

506 GIDDINGS MACHINE CO., 401 PINE ST., FORT COLLINS, COLO., has prepared a 4-page bulletin on its Model GS soil sampling machine, which makes possible the getting of reliable facts on soil structure quickly and at low cost. Model GS can be quickly and economically adapted for use as post driver and puller and as concrete boring machine.

14gpm and 18gpm Submersibles

507 BERKELEY PUMP CO., P. O. BOX 7, STATION A, BERKELEY 2, CALIF. has added the 4DL 14 gpm series and 4DM 18 gpm series to its line of 4-inch submersibles. Capacity of both models is said to be more than adequate for large domestic water systems. Settings may be as deep as 700 feet with full 40-pound cutoff pressure. Horsepowers range from ½ through 5.

Painting Systems for Swimming Pools

508 "Recommended Maintenance Painting Systems for Swimming Pools" is based on a detailed study of the painting problems and practices on swimming pools. It will prove a valuable aid in the proper maintenance of both steel and concrete pools. Write TROPICAL PAINT CO., CLEVELAND 2, OHIO.

Concrete Sawing Equipment

509 Current catalog from CONCUT SALES, INC., 1845 BELCROFT AVE., EL MONTE, CALIF., presents equipment for every municipal concrete and asphalt sawing job, including blades for green and cured concrete.

Aluminum Chain-Link Fence

510 ANCHOR FENCE, DEPT. AC9, 6661 EASTERN AVE., BALTIMORE 24, MD., announces availability of a catalog on its new, Reynolds aluminum maintenance-free chain-link fence for highways, parks, playgrounds, plants.

Sewer Service Question-Answer Booklet

511 A 12-page booklet answers the questions most commonly asked by homeowners about sewer service. It's entitled "50 Questions," and has been published by JOHNS-MANVILLE, PIPE DIV., 22 E. 40TH ST., NEW YORK 16, N. Y. for informational purposes in areas where new community sewer services are being installed or are contemplated.

Floodlights

512 Quartzliters Series 7000 are designed for 500- and 1500-watt quartz iodine lamps and have three different beam spreads. Because of their compact size, low weight and higher lumen output they can be mounted in banks of fewer units, on fewer poles and with lighter, less expensive service conductors. Write STEBER DIVISION, THE PYLE-NATIONAL CO., 2700 ROOSEVELT RD., BROADVIEW, ILL.

(See page 65 for more Bulletins)

No. 1 in a series of announcements on new HOUGH *machines*

The NEW 1¼ cu. yd. H-30 is even more

outstanding

than ever before with 25% greater capacity, many refinements, and additional features

When the H-30 was originally introduced, more than a year and a half ago, it was far ahead of any other tractor-shovel in its class. It has been exceptionally well received and its performance has been praised by owner and operator alike.

Now, as the result of HOUGH'S continuing program of research, development and improvement, the new H-30 series "B" model is an even better machine. Here are a number of points of special interest . . .

More Capacity: With a 1¼ cubic yard bucket, this new model has 25% more capacity. At the same time, the exceptional stability and balance of the original H-30 unit has been retained.

More Safety: The only loader in its class with boom arms positioned ahead of, and away from operator. It has a walk-in operator compartment, new hand rails and safety ladder, new adjustable bucket seat, and unmatched operator visibility.

Less Maintenance: The only loader in its class with simplified boom mechanism and single bucket tilt cylinder having from 6 to 12 fewer pivot and grease points to service. All bucket and lower boom-arm pivot points are sealed against dust and dirt. The battery, instrument connections, fuel tank and transmission can be serviced from ground level. A stock of only 4 different hoses will service all the hydraulic system.

More Power: The H-30B has more horsepower-per-pound of weight than comparable tractor-shovels. Torque-converter is engineered to proportion engine power properly between drive-train and hydraulic requirements.

Better Braking: The four wheel hydraulic brakes give equal braking in forward or reverse and are sealed against dust and dirt. Exclusive HOUGH axle design permits servicing and relining brakes without removing and exposing planetary hubs to dust.

Full Power-shift Transmission: The only loader in this class with a "full" power-shift transmission which does not require stopping and engaging gears for a "range" shift. There are three speeds, both forward and reverse, and all shifts in either direction can be made "on-the-go." This dependable HOUGH transmission has been proven in thousands of PAYLOADER units.

Closed Hydraulic System: This exclusive HOUGH protective feature adds longer life and lower maintenance because the hydraulic reservoir is sealed and pressure-controlled to exclude air-borne dust and moisture. A full-flow, fine-mesh screen and a larger cartridge-type filter give extra hydraulics protection.

Positive Oil Cooling: Separate fan-cooled oil-to-air radiator assures positive cooling of both transmission and torque converter oil even in hot climates. Another exclusive HOUGH protective feature.

"Operator's-choice" Braking: Dual brake pedals give the operator a choice of braking with or without transmission engaged. The only loader in its class with this valuable HOUGH-pioneered feature.

"Power-transfer" Differentials: Both axles are equipped with torque-proportioning differentials. When one wheel has better traction than the other on the same axle, it can automatically receive up to 38% more torque. This assures the best possible traction at all times.

The H-30 series "B" is offered with a choice of gasoline or diesel power and with buckets from ¾ to 2½ cubic yard capacities (S.A.E. rated) for handling materials of various weights. For additional information, see your HOUGH distributor or use the attached coupon.

THE FRANK G. HOUGH CO. 9-B-1
710 Sunnyside Ave., Libertyville, Ill.

Send complete data on H-30B PAYLOADER

Name _____

Title _____

Company _____

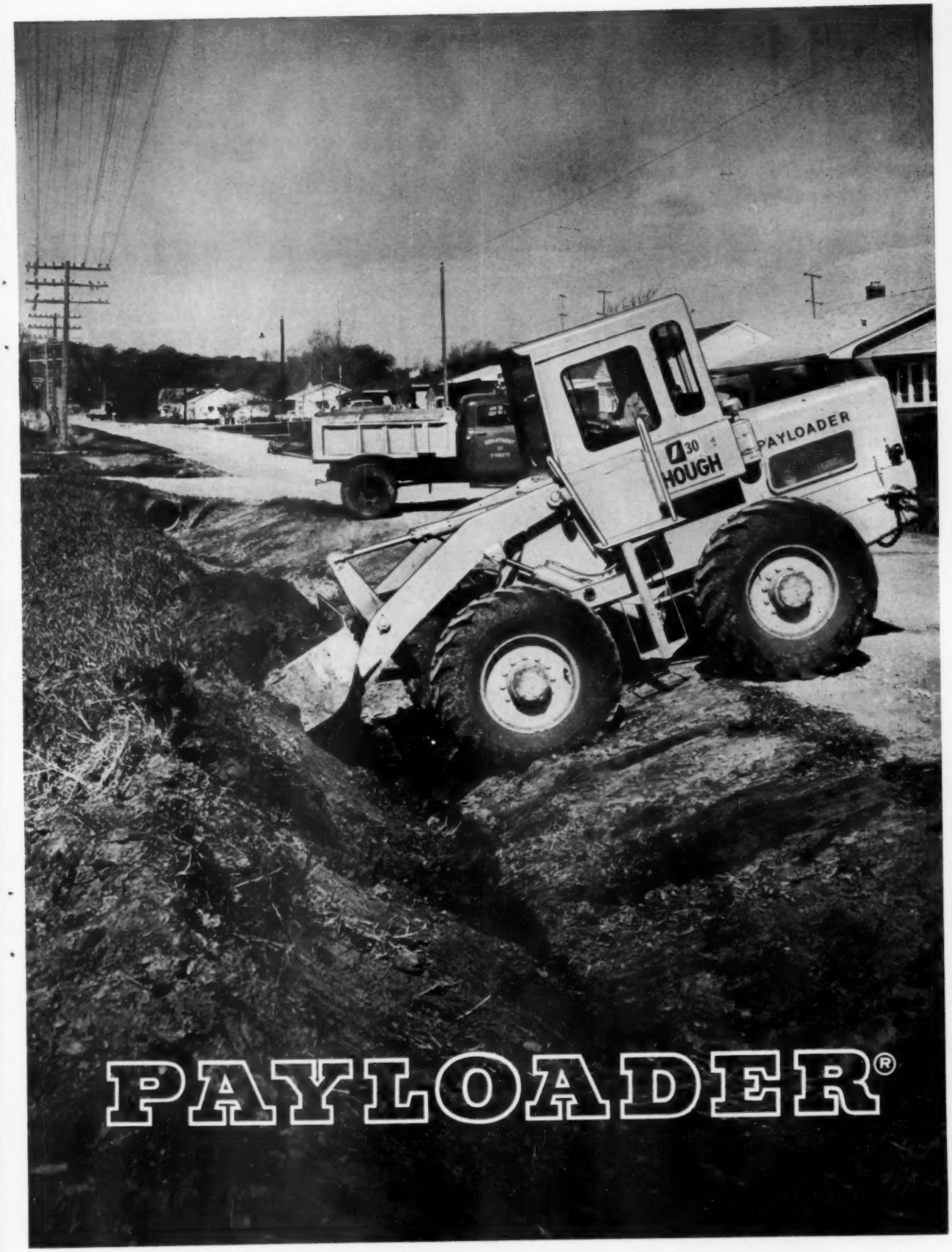
Street _____

City _____ State _____

HOUGH®

THE FRANK G. HOUGH CO.
LIBERTYVILLE, ILLINOIS
SUBSIDIARY — INTERNATIONAL HARVESTER COMPANY

HOUGH, PAYLOADER, PAYDOZER, PAYMOVER, PAYLOGGER, PAYLOMATIC and PAY are registered trademark names of The Frank G. Hough Co.


30
HOUGH
PAYLOADER
PAYLOADER®

One man can effortlessly ditch 1¼" ABS plastic gas distribution main by merely lifting the solvent welded line and dropping it into the ditch.

Workman demonstrates the lightness of semi-rigid ABS pipe as he carries four pre-assembled 70-foot sections of house service lines to ditching site.

ARIZONA PUBLIC SERVICE CUTS INSTALLATION TIME FOR NEW SUBURBAN GAS SYSTEMS WITH

SEMI-RIGID PIPE *made of* ABS *Plastic*

NON-CORRODING ABS PIPE SYSTEM OFFERS NEW PROOF OF INSTALLATION, MAINTENANCE ECONOMIES

Light-weight ABS pipe is helping Arizona Public Service Company keep pace with the expanding demand for natural gas service in new suburban areas, such as Fairway Estates in Phoenix. For dependable, long service life and safety, this major utility specified ABS pipe in distribution mains and house service lines; now installs up to 35 house services per day with a six-man crew. Ease of handling, ease of joining through solvent welding, and lower maintenance costs are advantages inherent in ABS pipe extruded of CYCOLAC brand polymers by Arizona Plastic Extrusion and Southwestern Plastic Pipe Company of Arizona.

The full story of the unique properties of ABS pipe is told in a remarkable twenty minute motion picture film. For a free private showing, write to Dept. A-9.

BE *ABSolutely* SURE . . .
INSIST ON RIGID *ABS* PIPE
made of
CYCOLAC
BRAND POLYMERS
THE BORG-WARNER PLASTIC THAT IS TOUGH, HARD AND CORROSION-RESISTANT

MARBON CHEMICAL DIVISION **BORG-WARNER**
WASHINGTON WEST VIRGINIA

CYCOLAC is the registered trademark of Borg-Warner

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

Sewage Odors? Water Odors and Taste Problems?

518 INVEX, INC., BOX 1335, NORTH MIAMI 61, FLA., manufacturer of the Invex Ozone Generator, offers comparative cost data and information regarding the control of sewage odors and removal of odor, taste and color from potable waters. Literature available on request.

Relief-Unloading Valve

519 *Bulletin* S-5 describes a cushioned automatic relief-unloading valve for steam, air, gas and fluid control service. Valves are regularly furnished in sizes of 2½ inches to 24 inches with flanged ends for service to 900 psi. Selection data and engineering specifications included. Write GOLDEN-ANDERSON VALVE SPECIALTY CO., 1200 RIDGE AVE., PITTSBURGH 33, PA.

Aerial Tower Bulletin

520 A new, 16-page catalog covering the complete line of Ottawa Strato-Towers outlines the variety of models available, detailing specific data on each type. Charts cover the heights and working capacities of each of the 30 models. Request *Form* ST-6101; write EQUIPMENT DIV., YOUNG SPRING & WIRE CORP., BOWLING GREEN, OHIO.

Tractor Shovel Bulletin

521 A specification bulletin explaining the features that enable the new Model 254 Trojan tractor shovel to deliver superior production for the user along with fast, economical operation is available from TROJAN DIVISION, THE YALE & TOWNE MFG. CO., BATAVIA, N. Y. Standard and optional equipment listed.

New Revere Luminaire

522 New 2600 Series "Unitized Endoval" luminaire uses 250- or 400-watt mercury lamps, provides high-level illumination for arterial streets, is offered with built-in ballast and adapter for photo-electric control. Request *Bulletin* 700-15; write REVERE ELECTRIC MFG. CO., 7420 LEHIGH AVE., CHICAGO 48, ILL.

Speed Municipal Services

523 Want to accomplish a larger portion of your everyday material-handling, clean-up, lawn and other municipal maintenance work faster and at less cost? Then ask J. I. CASE CO., DEPT. E1561, RACINE, WIS., for details on its utility-size loaders.

1962 Chevrolet Trucks

524 There's much that's new and improved in the 1962 line of Chevrolet trucks, which includes 198 different models, diesel power in medium- and heavy- duty models, and broader power team options. For details, write CHEVROLET MOTOR DIVISION, DETROIT 2, MICH.

Save Your City's Trees

525 Pruning, tree surgery, spraying, feeding—DAVY TREE EXPERT CO., KENT 16, OHIO, provides every kind of tree-saving service to communities both large and small. F. F. LOFGREN, SALES MGR., will supply details on this all-community tree maintenance service.

Safer Highway Travel

526 *Data Sheet* TR-246 supplies full facts on Transite Underdrain Pipe, explains how and why it is able to increase roadway and runway safety, turn in superior performance in groundwater control. Write to JOHNS-MANVILLE, BOX 14, AC-8, NEW YORK 16, N. Y.

Planning a Municipal Incinerator

527 Then you'll want to obtain a copy of *Bulletin* 701, which gives full details and specifications for Detroit reciprocating grate incinerator stoker for municipal and industrial incinerators. Write DETROIT STOKER CO., division of UNITED INDUSTRIAL CORP., MONROE, MICH.

Tilts, Dumps, Raises, Lowers

528 Wonderlift trailers, with capacities from 1,000 to 10,000 pounds, make it possible for one man to easily handle heavy loads. For full details and municipal applications of these single or tandem wheel models, write SELMA TRAILER & MANUFACTURING CO., HIGHWAY 99 at HIGHLAND AVE., SELMA, CALIF.

Clearly Marks Traffic Hazards Day and Night

529 Traffic hazards reflectorized with Cataphote V-S-R make drivers instantly aware of shape, position, extent of the danger. *Catalog* V-100 fully explains the safety values of this vertical surface reflectorization. Write CATAPHOTE CORP., TOLEDO 10, OHIO.

Large-Diameter Gasoline Boring Machine

530 The G-160 is a 52-hp air-cooled gasoline powered boring unit capable of boring 36-inch diameter holes. It's especially suited for water, sewer, electrical and pipeline work. For details, write to KWIK-MIX CO., 235 W. GRAND AVE., PORT WASHINGTON, WIS.

(See page 66 for more Bulletins)

MH Roll-call for water

the DEMON FIRE

Some of the largest and most modern water works systems in the U.S. are located here in the east-north-central States. It is hard to believe that here 90 years ago, a sprawling, shambling frontier city built of wood, practically burned to the ground when Mrs. O'Leary's cow kicked over a lantern. The Chicago Fire in 1871 was one of the first great disasters of U.S. history. It destroyed $200 million in property and took 250 lives.

U.S. Department of Commerce lists 85 midwest cities today as having adequate and efficient water works, with an overload capacity 20% in excess of maximum-day load. But the Department also lists 16 midwest water works as inadequate and 18 additional water systems as definitely deficient! Here lives some 15 million Americans – But over 3 million of them have inadequate water supply facilities!

Annual property loss from fire in the U.S. in 1959 was in excess of 1 billion dollars. At the same time, approximately half of the water works facilities of the U.S. are inadequate or deficient in capacity. Considering present water distribution deficiencies and increasing demand due to population growth, it is estimated that water supply facilities will need to be doubled within the next 20 years.

Ohio
Indiana
Illinois
Michigan
Wisconsin

M&H VALVE AND FITTINGS COMPANY
ANNISTON, ALABAMA
A WALWORTH SUBSIDIARY

CATALOGS *for Improved Municipal Services*

Write to address given or circle corresponding number on free post card on page 55.

Mercury Vapor Lamps

531 "Why Lifeguard Mercury Lamps?" is a new booklet published by WESTINGHOUSE LAMP DIVISION, WESTINGHOUSE ELECTRIC CORP., BLOOMFIELD, N. J. It contains facts about life and maintenance of mercury vapor lamps, lamp construction, chart on lumen output, and lists the various types of mercury vapor lamps.

Unclogs Sewer Lines

532 Just pour ND-25 into the manhole and it begins to go to work, emulsifying grease and oil, digesting roots, paper and other materials containing a high percentage of cellulose. It's colored red so you can trace its effectiveness. Brochure gives details; write NATIONAL CHEMSEARCH CORP., 2417 COMMERCE ST., DALLAS, TEX.

Dependable Water Meters

533 There are many reasons why these Easy-Read magnetic drive sealed register water meters maintain accuracy over long periods of time, why neither water leakage nor corrosion makes demands on the mechanism. BADGER METER MFG. CO., 4545 W. BROWN DEER RD., MILWAUKEE 23, WIS., will give you a full accounting.

Cuts 6000 Feet of Asphalt Paving an Hour

534 A new high-speed rotary asphalt cutter called Roto-Cut enables one man to cut over 6000 linear feet of asphalt paving an hour. It can be attached easily to any piece of construction equipment having hydraulic down pressure. Write ALLIED STEEL & TRACTOR PRODUCTS, INC., 7835 BROADWAY, CLEVELAND 5, OHIO.

New Power Street Sweeper

535 Starsweep 1054 incorporates many features that increase street sweeping efficiency. It has a 54-inch sweeping swath, 16 cubic foot hopper capacity, 78 square foot filter area. For literature, write WAYNE MFG. CO., 1201 E. LEXINGTON ST., POMONA, CALIF.

Sports Lighting

536 A new, illustrated lighting report (A. I. A. File No. 31F23) shows both mercury vapor and incandescent fixtures in indoor gymnasium applications, discusses light distribution, uniformity, output/wattage relation, etc. Write HOLOPHANE CO., INC., 342 MADISON AVE., NEW YORK, N. Y.

Protects Metal Surfaces

537 Sanfax SG-873 guards metal surfaces against corrosion, rust, pitting, snow, slush buildup. It can be applied to snow-plow blades, truck bed, snow removal equipment and earth moving equipment. Write SANFAX CORP., P. O. BOX 604, ATLANTA, GA.

Rugged Rotary Mixer

538 Mix, blend, pulverize, reclaim, add moisture, aerate, clear land, prepare seedbeds—Unimix does all, operating off tractor power in the 55-80 B.H.P. range. For literature, write HOWARD ROTAVATOR CO., INDUSTRIAL DIVISION, HARVARD, ILL.

Multi-Cell Incinerator Stokers

539 By writing to FLYNN & EMRICH, BALTIMORE 2, MD., you can obtain engineering details and data on the F & E multi-cell incinerator stokers, which offer flexibility of operation, progressive burning, economy, dependability.

Tandem Rollers

540 Economy of operation is but one advantage offered by these rollers. Others are described in literature available from the HUBER-WARCO CO., MARION, OHIO.

Minimize Smoke, Water Damage

541 Municipal fire departments will find these light, pliable, mildew-resistant salvage covers easy to handle in any temperature and effective in protecting property against smoke and water damage. Write FULTON COTTON MILLS, P. O. BOX 1726, ATLANTA 1, GA.

Construction Castings

542 New, 168-page catalog shows the complete line of gray and ductile iron construction castings available from NEENAH FOUNDRY COMPANY, NEENAH, WIS.

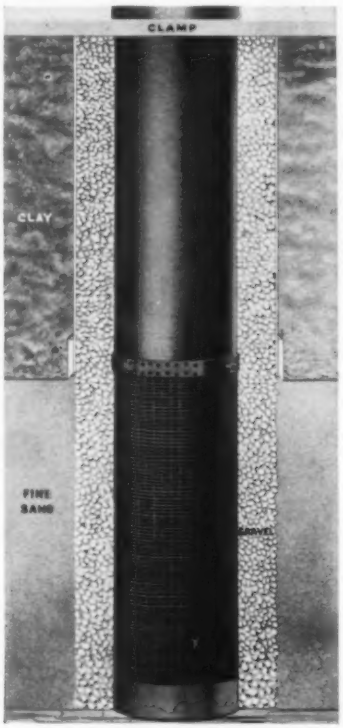
Wedge Lock Clay Pipe

543 A 12-page "case history" booklet details typical installations and applications of Wedge-Lock clay pipe and fittings in public sanitary sewerage projects and in residential developments, public institutions and industry. Copies are available from the following manufacturers: Cannelton Sewer Pipe Co., Cannelton, Ind.; The Clay City Pipe Co., Uhrichsville, Ohio; Graff Kittanning Clay Products, Worthington, Pa.; Larson Clay Pipe Co., Detroit, Mich.; Lehigh Sewer Pipe & Tile Company, Fort Dodge, Ia.; The Logan Clay Products Co., Logan, Ohio; The Owensboro Sewer Pipe Company, Owensboro, Ky.; Pomona Terra-Cotta Co., Greensboro, N. C.; The Robinson Clay Product Company, Akron, Ohio; Superior Clay Corporation, Uhrichsville, Ohio.

(See page 69 for more Bulletins)

Reasons why gravel wall wells operate better and longer with

COOK WIRE WOUND STRAINERS



Cook's exclusive V-shaped, self-cleaning slots *guarantee* continuous sand-free water without clogging. Cook strainers have a much greater inlet area than either ordinary punched opening, or wire-wrapped perforated pipe strainer. They are flush inside with the i.d. of the well pipe allowing the use of a full size surge. Cook strainers have a phenomenal long life; due to their greater strength, a result of heavy hard drawn wire and bar construction. They are made from one metal, eliminating corrosion due to dissimilar metals.

When a fine sand water bearing formation calls for a gravel wall well, Cook Wire Wound Strainers will pay you big dividends over the years.

Available in a complete range of slot sizes for *all types* of sand and gravel formations. 8 to 24 hour delivery on most types, by telephoning Cincinnati, HUmboldt 1-8800.

world's leading name in well strainers

COOK WELL STRAINER CO.

6330 GLENWAY AVENUE • CINCINNATI 11, OHIO

S-T-R-E-T-C-H
your equipment-dollars with utility-size machines

. . . speed-up your services

How often do you keep a $12,000 to $20,000 tractor-loader at a job-site all day, to accomplish only 1½ hours of intermittent work? Wouldn't it be better to use a less-costly utility-size tractor that takes an extra hour for the work . . . and then *have more machinery* to take care of two or three projects at once?

Some jobs, of course, *require* big machines, especially for heavy continuous digging. But for a variety of work — including large-scale grass mowing — one large tractor *plus* a fleet of 2 or 3 low-cost, mobile, Case *Utility* Loader units can handle *three times as many jobs* as two big machines . . . and with the *same equipment budget.* In addition, the Case rigs can move quickly around town in normal traffic, and can work in close quarters and softer footing — where bigger, heavier rigs can't go.

For season-long mowing

During the summer, grass and weeds can be kept smoothly cut as short as 1" with this 3-blade center-mounted rotary mower mounted on Case *Utility* Loaders. Mower cuts ahead and beyond rear wheels, lifts up out of the way for normal loader work between mowing jobs. Side-mount cutter-bar mowers also available.

Rubber-tired Case *Utility* Loaders are offered in two sizes to fit your work at lowest cost. Both are available with Case-built *high-torque gasoline or diesel engine.* Model 530 Loader gives you power and traction for light digging, 2000-lb lift capacity, quick-reversing shuttle transmission and power steering for fast dig-dump cycles . . . 14′ backhoe optional. Model 430 provides up to 1200-lb lift capacity, makes an excellent handyman for bulk materials handling, clean-up after street-work, and odd-lot material handling . . . 10′ backhoe available. Optional loader equipment (dozer blade, rubbish fork, log fork, pallet fork) give you multiple-task versatility. Large-area lawn can be mowed between loader jobs with center-mounted Case-Danco 6′ rotary mower. And rear-mount attachments let you do dozens more maintenance jobs.

See how Case *Utility* Loaders can handle a larger portion of your everyday work faster, at less cost. Call your Case Dealer — today — for free demonstration. Or send coupon for free specification information.

J. I. CASE COMPANY, Dept J-1561 RACINE, WISCONSIN

CASE. *Utility*

Send specifications on *Utility* machines and attachments:

☐ 2000-lb Model 530 Loader ☐ 1200-lb Model 430 Loader

☐ Other .....

Name .....

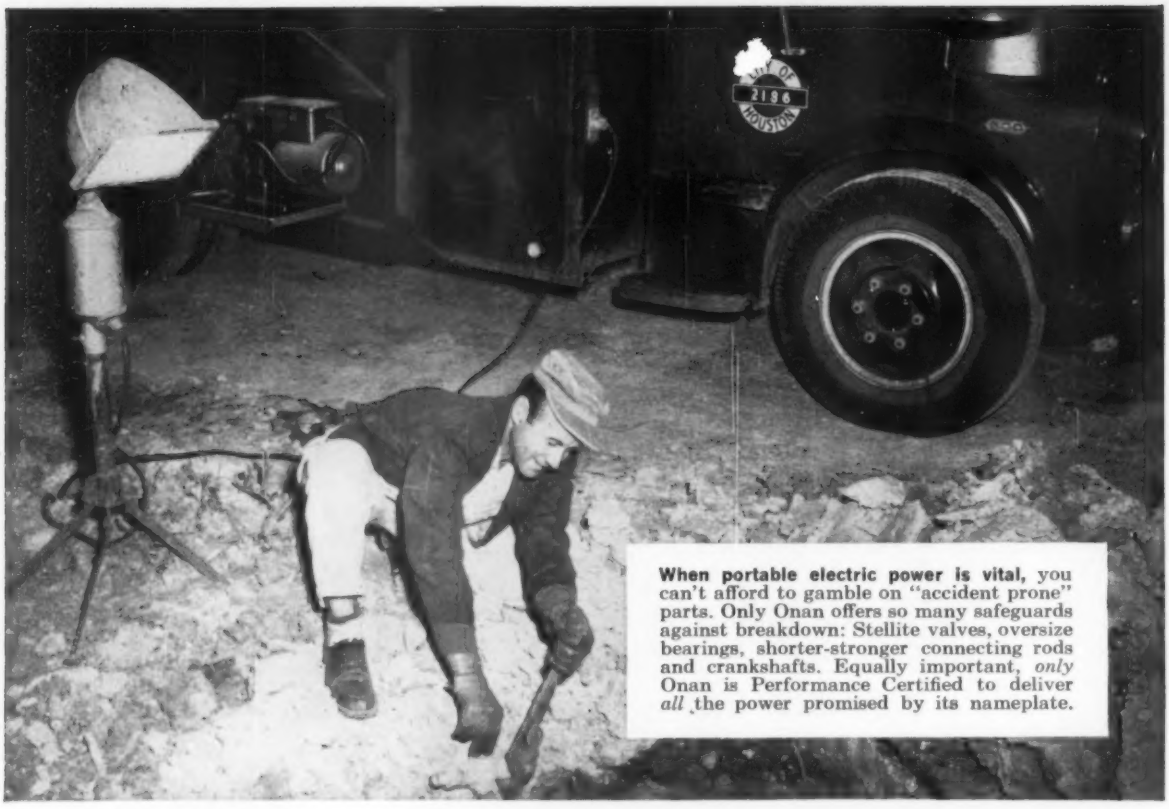
Position .....

Employed by .....

Address .....

City ..... State .....

CU-L-290



When portable electric power is vital, you can't afford to gamble on "accident prone" parts. Only Onan offers so many safeguards against breakdown: Stellite valves, oversize bearings, shorter-stronger connecting rods and crankshafts. Equally important, *only* Onan is Performance Certified to deliver *all* the power promised by its nameplate.

Only Onan is certified to give you all the power promised by its nameplate

It's a fact that many electric plants on the market today do not deliver the output promised by their nameplate rating.

Every Onan plant is given a rugged workout *under full load* before it is shipped—*your assurance* that the Onan you buy is ready for hard work the day you get it.

But this isn't enough. Independent laboratory inspectors pull surprise inspections to double-check our tests and testing methods. They pull a plant off the line, run it, stop it, load it, overload it, check and recheck. Their torture test gives positive proof of Onan's quality. End result: *Onan's exclusive Performance Certification* . . . your assurance of getting every watt of power you pay for.

So when you're tempted by an electric plant "bargain," make sure its nameplate rating is not "inflated." Be sure you're getting full measure for your money. Remember, *the electric plant that short-changes you in power output is no bargain at any price!* Only Onan is Performance Certified to deliver everything the nameplate promises.

See Onan electric plants soon. Compare before you buy. You'll find your Onan distributor listed in the Yellow Pages. Call him or write direct.

PERFORMANCE CERTIFIED
We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory
Onan
Onan
World's Leading Builder of Electric Power Plants

Onan

ONAN Division, Studebaker-Packard Corporation, 2621 University Ave. S. E., Minneapolis 14, Minn.

FREE catalogs

Write to address given or circle corresponding number on free post card on page 55.

Rugged Mercury Lamps

544 By writing to the LIGHTING DIVISION, SYLVANIA ELECTRIC PRODUCTS, INC., DEPT. 63, 60 BOSTON ST., SALEM, MASS., you can obtain information on the advantages of these mercury lamps for indoor-outdoor lighting and learn why they deliver the most light for money expended.

Ice, Snow, Frost Detector

545 Literature offered by KAR-TROL SIGNAL CO., INC., 12739 S. Main St., HOUSTON 35, TEX., gives details, specifications and special applications of a unit that automatically and immediately detects ice, snow or frost on surfaces of bridges, structures or roadways and warns approaching traffic of these conditions by use of blank out, warning signs.

Diesel Engine Bulletin

546 This diesel engine bulletin reports on a line of easy-starting, smooth-running, self-contained, light-weight diesels suited for powering portable equipment, emergency pumps and generators. Both air-cooled models (2 to 4½ bhp) and water-cooled models (2 to 8 bhp) discussed. To obtain full facts on Yanmar diesels, write CONTINENTAL MACHINERY CORP., 19402 S. SUSANA RD., COMPTON, CALIF.

Strengthens Concrete Pavement Slabs

547 Steel reinforcement distributes load transfer and reduces stresses in concrete slabs by about 30%, reports AMERICAN STEEL AND WIRE, ROOM 1275, ROCKEFELLER BLDG., CLEVELAND 13, OHIO. It diminishes the pavement's tendency to crack, prevents progressive opening of any cracks which do occur, provides smooth, safe, lasting riding surface. Write for details.

Alternator Control for Duplex Pumping Equipment

548 The Protectrol Alternator has been developed by PROTECTION CONTROLS, INC., 7317 N. LAWNDALE AVE., SKOKIE, ILL., for safe, reliable, actuation of duplex equipment. Applications include duplex pumps in sump and sewage units, boiler water systems, storage tanks, and various fluid process systems.

Prestressed Concrete Tanks

549 This is the title of a new brochure made available by THE PRELOAD COMPANY, INC., 355 LEXINGTON AVE., NEW YORK 17, N. Y. It details the long and short term service and economic advantages, construction features, and reasons why prestressed concrete should be considered in any storage tank planning.

Determines Bitumen Percentage

550 Current catalog available from SOILTEST INC., 4711 W. NORTH AVE., CHICAGO 39, ILL., details the portable AP-175 centrifuge extractor, which separates asphalt and bituminous mixes to determine bitumen percentage, preventing errors and over-design, saving time and materials on construction projects.

Gratings for Municipal Use

551 Pressure-locked aluminum grating that can be engineered to fit precisely around pipes and valves in a modern water-pumping station, is only one type of grating that can be fashioned by IRVING SUBWAY GRATING CO., INC., 50-46 27TH ST., LONG ISLAND CITY 1, N. Y. Catalog details all types and metals.

Water Loss Detection

552 *Bulletin* 100 is entitled "From Little Hidden Water Leaks Great Deficits Grow . . . And Grow." It is written for the municipal water department and official and explains how a specialized water loss detection service can eliminate water leak losses and saves thousands of dollars. Write MASTER LEAKFINDING CORPORATION OF AMERICA, ELMHURST, ILL.

Highway Maintenance Spreader

553 A rugged, efficient, single-auger cab-controlled body spreader that will apply sand, cinders, salt or mixtures in minumum, controlled amounts is the subject of a new piece of literature offered by TARRANT MFG. CO., 27-29 JUMEL PLACE, SARATOGA SPRINGS, N. Y.

Epoxy Resin Bond for Concrete—Free Trial

554 New 6-page gatefold brochure highlights the applications, versatility and many advantages to the maintenance field of Sta-Crete epoxy resins. Includes formula table and report on chemical resistant tests. Trial Kit of Formulation #15 can be obtained upon request ($2 handling charge). Write STA-CRETE, INC., 115 NEW MONTGOMERY ST., SAN FRANCISCO 5, CALIF.

High Efficiency Floodlights

555 WIDE-LITE CORP., 4114 GULF FREEWAY, HOUSTON, TEXAS, has just issued a 34-page booklet on its complete product line, outdoor and indoor. Models, construction, specifications, applications, etc. included. Address DEPT. JA111.

(See page 70 for more Bulletins)

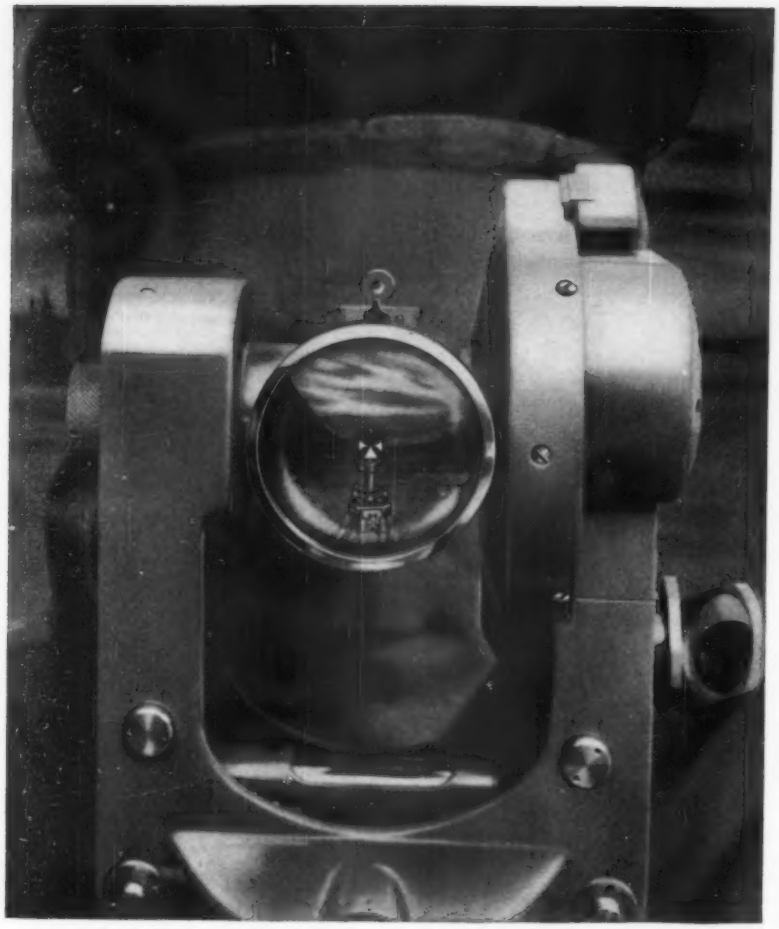
TOTALLY NEW
For today's needs—the world's most advanced, most dependable mobile two-way radio. Costs less, weighs less, outperforms all others.
AEROTRON

story of a man who saved $4,000

He was thinking of buying Mobile FM Radio. Saw one of our ads—mailed the coupon and received a free paper model of the Aerotron Slimline. Then, slipped paper model under the dash of one of his vehicles—looked good—didn't take much space either. The Slimline is all-aluminum construction—weighs only 8 lbs. 11 ozs. Battery drain is no more than your parking lights use—has transistorized power supply, too. The hand wired circuitry is more reliable—easier to repair. Optional features include: up to three transmit and receive channels, and Unicall, for sharing crowded frequencies without interference. How did he save $4,000? Bought 10 Slimlines at $395 each—half the price of the other units he had considered. Moral? If you're thinking of buying Mobile FM Radio—clip this ad to your letterhead and we will send you a free paper model of the Aerotron Slimline.

AEROTRON

AERONAUTICAL ELECTRONICS, INC. • BOX 6527 • RALEIGH, N. C. • MAKERS OF FAMOUS 6N15 MODEL



A FAVORITE FOR CONSTRUCTION, MINING AND MILITARY survey s. The reading system, fully illuminated, features a scale microscope direct to 1′ and better than 20″ by estimation. Repetitions are made with a circle clamp, eliminating upper and lower motions. Simple operation and reading, ruggedness, and highest Wild precision in optics and mechanics combine to make the T-16 your best choice in this type instrument...by far!

WILD
HEERBRUGG

WILD T-16
OPTICAL TRANSIT
Available with erecting image telescope Model T-16E

One of a *complete* line of superb instruments for Surveying, Photogrammetry and Microscopy. *Write for Booklet T-16.*

WILD HEERBRUGG INSTRUMENTS, INC. • PORT WASHINGTON, NEW YORK
In Canada: Wild of Canada Ltd., 157 Maclaren St., Ottawa, Ontario

FREE catalogs

You will find of interest

Write to address given or circle corresponding number on free post card on page 55.

Announces New Mercury Luminaire

557 LINE MATERIAL INDUSTRIES, MILWAUKEE 1, WIS., has added another unit to its family of Styled Mercury luminaires. The new addition is of upsweep design. Bulletins on this unit and the entire Styled Mercury group are available on request.

Well-Engineered Brush Chipper

558 FITCHBURG ENGINEERING CORP., DEPT. AC-18, FITCHBURG, MASS., manufacturer of the rugged, trouble-free, quick-working Fitchburg brush chipper, announces the availability of articles which describe 5 methods of brush disposal, and 10 new ways to utilize brush chips.

For Small Drilling Jobs

559 CLIPPER MFG. CO., SUITE 102, 2800 WARWICK, KANSAS CITY, MO., has added Surface Set Throw-A-Way core bits to its line of masonry and concrete cutting saws and blades. Use of these bits is said to result in faster cutting in critical areas and steel reinforced concrete. Literature available.

More Economical Refuse Collection

560 PAK-MOR MFG. CO., 1123 S. E. MILITARY DRIVE, P. O. BOX 14147, SAN ANTONIO, TEXAS, is making available literature which shows how the team of a Lo Boye trailer and Handi-Lift container system combine to provide refuse collection operation that results in lower operating costs.

Water Works Brass Goods

561 By writing to A. Y. MCDONALD MFG. CO., DEPT. AC61, 12TH & PINE STS., DUBUQUE, IA., you can obtain complete details and specifications on a line of quality brass goods and water service fittings that includes corporation stops, curb stops, angle meter stops, extension service boxes.

Municipal Equipment Planning Aid

562 A new catalog offered by INTERNATIONAL HARVESTER CO., DEPT. AC-9, P. O. BOX 7638, CHICAGO 80, ILL., helps you rate your 1961 job requirements against International power size. The catalog is titled *International Tractors and Matched Equipment* and gives key specifications.

Four Backhoe-Loaders

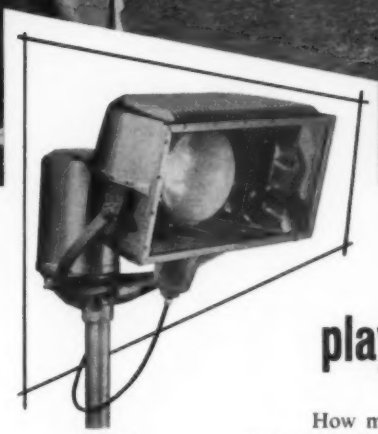
563 Each of these field-proved utility backhoe-hoe loaders fit all popular makes of tractors. Features include fast cycling action, 3-position dig-all buckets, live-circle hydraulic loop. To learn of others and to get the full story, write PARSONS COMPANY, NEWTON, IA.

Improved Asphalt Smoothing Irons

564 New, improved Surfa-Slick self-heating asphalt smoothing irons feature a redesigned paving iron shoe. Units are said to be able to operate under all weather conditions. Available in propane or gas-fired models. For details, write WEST COAST STEEL PRODUCTS CO., 3120 FIFTH ST., RIVERSIDE, CALIF.

(See page 75 for more Bulletins)

Colonial Palms Golf Course, Miami, Florida



Patented

Wouldn't your course get more play if it had WIDE-LITES?

How many of your golfers have to limit their play to weekends because of their office hours? And how many times does dusk keep them from playing the back nine?

There's no *need* for your course revenue to go down with the sun. Wide-Lites make it practical to light a complete 18-hole course, to give extra revenue all through the week. Relieves the week-end congestion at your course, too!

At the course shown above, 123 Wide-Lites mounted on palm trees give so much light that snapshots can be taken with daytime exposures. The 3400-yard par 4 course is so evenly lighted that a top touring pro playing a *night* exhibition match broke the *daylight* record for the course with an eight-under-par 52!

Wide-Lites, with their broad light pattern, give ideal sports lighting, free from annoying shadows or "hot spots." The Wide-Lite saves money, too—its rugged cast aluminum body and tempered glass lens protect the lamp and reflector . . . its mercury vapor lamp lasts 9 to 12 times longer than incandescents . . . power requirements are less.

Think for a moment how much more revenue Wide-Lites could bring to your course—then mail the coupon!

WIDE-LITE.

HIGH EFFICIENCY FLOODLIGHTS

In Canada:
Wide-Lite Division,
Wakefield Lighting Limited,
London, Canada

WIDE-LITE CORPORATION Dept. JA11
4114 Gulf Freeway • Houston, Texas

Send more information on Wide-Lites for golf. No obligation, of course.

Name_____

Title_____

Address_____

City_____ Zone_____ State_____

For top-flight mowing performance at rock-bottom cost, it's the 13.4 hp* International Cub® Lo-Boy® equipped with International Danco center-mounted rotary mower.

Pickup Sweeper: Jenkins Sweepster

Lower municipal maintenance costs

...start at your IH dealer!

From mowing neighborhood playgrounds, to heavy trenching for municipal utilities, your tractor and equipment budget goes farther at your IH tractor dealer. You save three ways:

First, from eight sizes of International tractors, you can select a power size to *exactly* match *each* job requirement. Only your IH dealer offers such a wide power range, plus a full line of matched equipment for each tractor size.

Second, no matter what power size International you select, IH built-in brawn assures greater strength plus traction for work-speeding performance and low maintenance.

Third, you get greatest possible protection against downtime! One of 5,000 IH dealers is near you. His local facilities, in turn, are backed by a nationwide network of IH parts depots—another plus when you specify International!

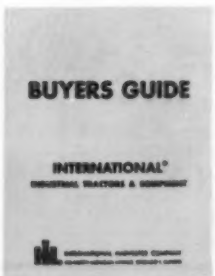
**Maximum flywheel hp at standard sea level conditions.*

47 hp* International T-340 crawler with Drott 4-in-1 Skid Shovel, most versatile of all earthmovers, pays off in winter use.

Low-cost pick-up broom attaches to International Wagner loader on International 240, B-275, 340 or 460 tractors. Equally effective for picking up dirt along street curbs; or paper, bottles, etc., on park or playground grass. Sweeps 75-inch path with gutter brush. Large-capacity hopper.

Low-cost snow clearance for sidewalks, municipal parking lots, and other areas is offered by the International Cub Lo-Boy tractor and 54-inch blade.

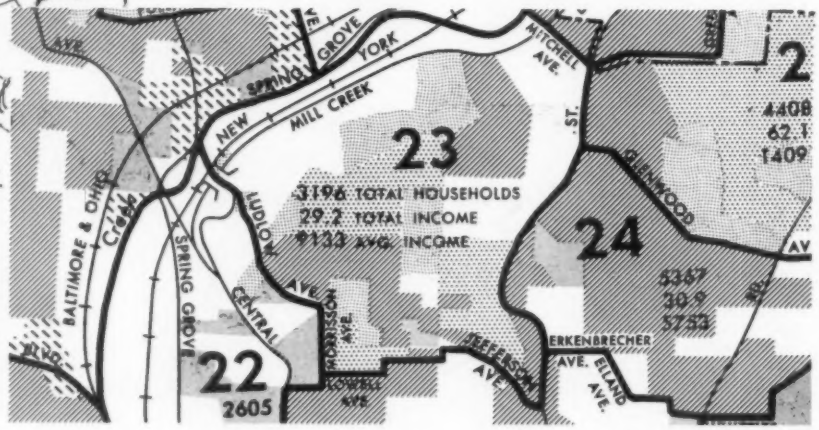
Speed all utilities maintenance operations and new construction with this low-cost fast-working rig—47 hp* International 340 with International Wagner loader and backhoe.



Equipment planning aid for 1962! New International industrial tractor and equipment "*Buyers Guide*" gives complete specifications on International wheel tractors, 7 to 95 hp* and 47 hp* T-340 and TD-340 crawlers; also mowers, loaders, backhoes etc. Write International Harvester, Dept. AC-9, P.O. Box 7333, Chicago 80, Ill. for your copy.

INTERNATIONAL HARVESTER

New Buying Power Map is latest addition to Sanborn planning aids



FIVE COLORS, represented here by gray tints, are used to show five different classes of average net income per household. Neighborhoods are broken into numbered districts with up-to-date statistical data on each.

● There *is* something new under the sun. Sanborn Buying Power Maps, now being completed for 50 of the largest metropolitan areas in the United States, show net household income down to the *neighborhood level.* Never before has such data been gathered and graphically portrayed on a nationwide scale. Moderately-priced, map units may be purchased only for the area or areas in which you are interested.

● Here is still another helpful aid from a company offering diverse assistance to planners, assessors, public utilities, market analysts, engineers and other city officials. This includes, of course, the detailed Sanborn insurance maps familiar to most officials. Of even greater significance is Sanborn's *custom-tailored service to cities,* placing experienced personnel and unrivalled facilities at your disposal for any job—from data-gathering and analysis to map-making and publishing.

SANBORN MAP COMPANY, INC.
DEPT. AC
629 FIFTH AVENUE • PELHAM, NEW YORK

At no obligation, please send us further information on:

_____ New Buying Power Maps _____ Other Services

NAME_____TITLE/DEPT._____

ORGANIZATION_____

ADDRESS_____

CITY_____STATE_____

■ **FOR FURTHER INFORMATION, PLEASE USE THIS COUPON**

SANBORN MAP COMPANY, INC.

629 Fifth Ave., Pelham, N. Y.

MONEY SAVING *catalogs*

Write to address given or circle corresponding number on free post card on page 55.

For Low-Cost Outdoor Lighting

565 In *Bulletin* 25 you'll find full information on all models of the Hope metal-pipe pole base, a rugged, durable malleable iron support for threaded outdoor lighting uprights with chamber for splicing and grounding. Write HOPE ELECTRICAL PRODUCTS CO., 53 LONG AVE., HILLSIDE, N. J.

Protects Your Pipelines

566 The current Air Control Valve Catalog, which is being offered by MULTIPLEX MFG. CO., DEPT. E, BERWICK, PA., will bring you up to date on a line of valves that are designed to protect pipelines by preventing air lock, collapse due to vacuum formation, etc.

Volumetric Chemical Feeder

567 *Catalog* No. 320.121 supplies technical data, operating and design features, and applications of a volumetric chemical feeder with loss-of-weight recorder Series A-690 for use in water treatment where chemicals, such as fluorides, must be accurately and dependably fed. It can also be used in sewage and industrial waste treatment. For copy, write WALLACE & TIERNAN INC., 25 MAIN ST., BELLEVILLE 9, N. Y.

Street Sweeper Fibres

568 A wide variety of domestic and imported fibers as well as tough, durable gutter wire for your power sweepers is available to fit your needs from the warehouse stock of A. STEIERT & SON, INC., HATFIELD, PA.

Rubber Pipe Gaskets

569 This illustrated brochure supplies engineering data and installation details on Tylox rubber gaskets for jointing concrete sewer pipe. Type "C" gaskets for straight pipe, Type "C-P" for offset pipe, as well as Type "A" are discussed. For copy, write HAMILTON KENT MFG. CO., 427 W. GRANT ST., KENT, OHIO.

Vehicle Warning Lights

570 *Catalog* No. 100 introduces several models of visual warning lights for automotive vehicles, offered by the AUTOMOTIVE DIVISION, NORTH AMERICAN SIGNAL CO., 909 W. RANDOLPH ST., CHICAGO 7, ILL. Description, specifications, illustrations included.

Heavy-Duty General Purpose Pump

571 Here's a pump that's designed for rugged service in sump, circulating cooling, booster and general industrial pumping applications. It can pump against high heads to 400 feet at low speed. BYRON JACKSON PUMPS, INC., P. O. BOX 70, LAWRENCEBURG, IND., calls it the Sumpmaster and reports full-fact literature available.

2-Way Radio Facts

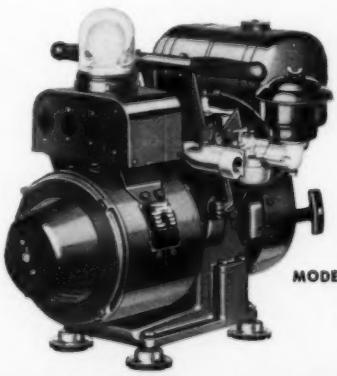
572 A fact-filled booklet about transistorized 2-way radio—its advantages, features, applications, economies, etc.—is being offered without obligation by RADIO CORPORATION OF AMERICA, TELECOMMUNICATION CENTER, DEPT. Z-4, MEADOW LANDS, PA. For copy, request "LD" Mobile Radio.

Power for tools
Power for floodlights
KOHLER ELECTRIC PLANTS

Lightweight, compact, portable models are easy to move wherever needed for floodlights, power tools, rescue gear.

Stand-by models provide instant, automatic electricity for alarm signals, sirens, when normal power fails—conform to Civil Defense specifications.

Only the best power source will match today's fire-fighting efficiency. Kohler electric plants are engineered for quick-starting, rugged service under all conditions. Municipal and volunteer fire departments everywhere rely on them for the vital role of independent power in protecting life and property. Sizes to 115 KW, gasoline and Diesel. Write for illustrated folder K-3.

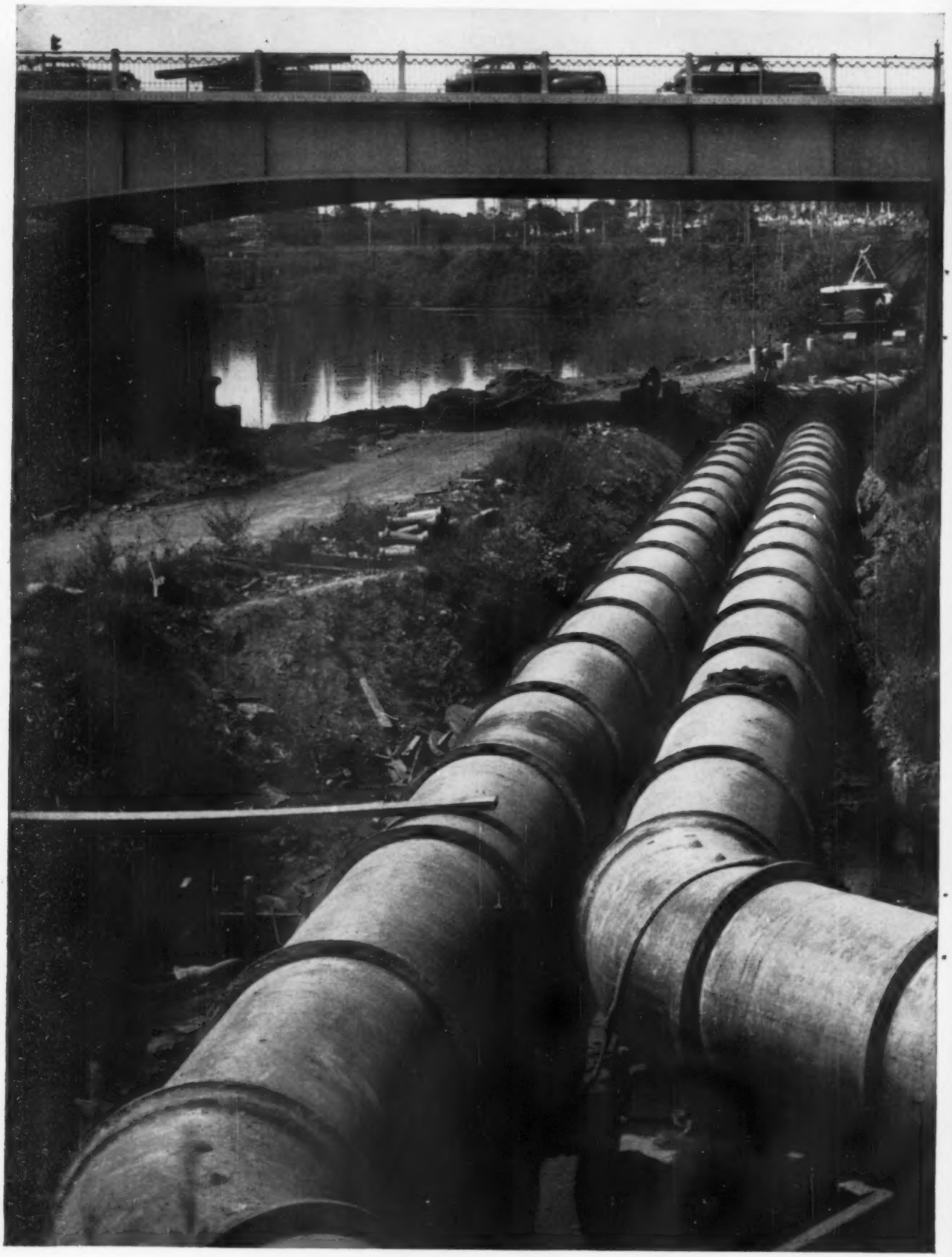


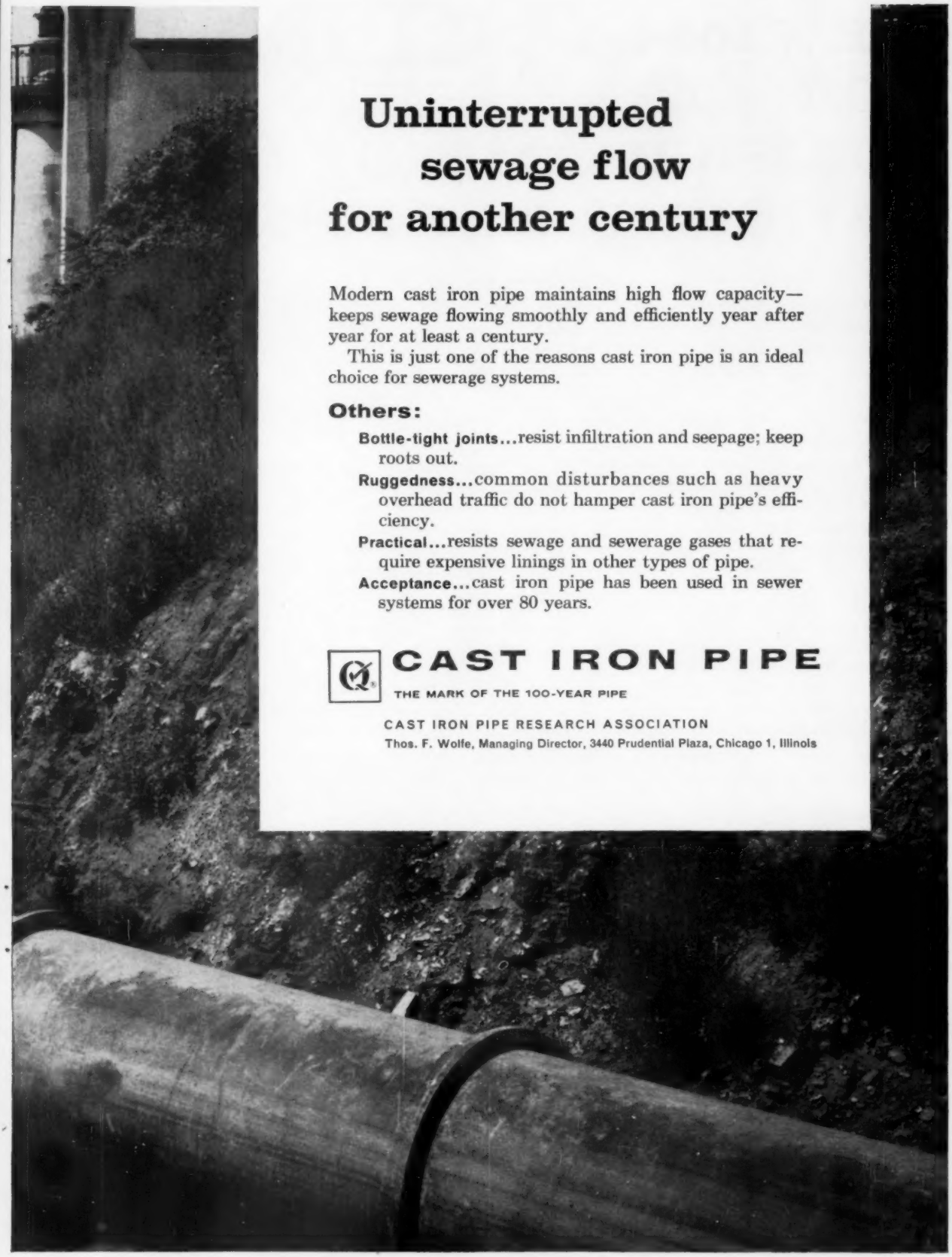
MODEL 1.5M25, *1500 watts, 115 volt AC. Manual start.*

KOHLER OF KOHLER

KOHLER CO. Established 1873 KOHLER, WIS.

ENAMELED IRON AND VITREOUS CHINA PLUMBING FIXTURES • ALL-BRASS FITTINGS
ELECTRIC PLANTS • AIR COOLED ENGINES • PRECISION CONTROLS





Uninterrupted sewage flow for another century

Modern cast iron pipe maintains high flow capacity—keeps sewage flowing smoothly and efficiently year after year for at least a century.

This is just one of the reasons cast iron pipe is an ideal choice for sewerage systems.

Others:

Bottle-tight joints...resist infiltration and seepage; keep roots out.

Ruggedness...common disturbances such as heavy overhead traffic do not hamper cast iron pipe's efficiency.

Practical...resists sewage and sewerage gases that require expensive linings in other types of pipe.

Acceptance...cast iron pipe has been used in sewer systems for over 80 years.

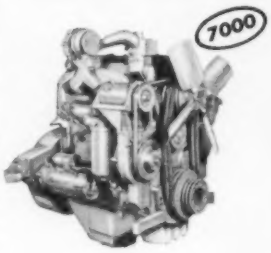
CAST IRON PIPE

THE MARK OF THE 100-YEAR PIPE

CAST IRON PIPE RESEARCH ASSOCIATION

Thos. F. Wolfe, Managing Director, 3440 Prudential Plaza, Chicago 1, Illinois

NEW 105-hp 145T JOINS THE ALLIS-CHALMERS MOTOR GRADER LINE



It's BIG . . . it's POWERFUL . . . and built to standards that give you the best performance and work-ability you ever had in a grader this size. A steady worker, the 145T is powered to handle all your blade jobs. Its big-grader features make it an outstanding unit for every contractor bidding for profit or every public body working on a tax dollar.

Check it yourself. The new 145T handles like a dream . . . works like a demon.

New 7000 engine. Proved in other Allis-Chalmers engines, the controlled turbulence, open combustion-chamber design of the turbocharged 7000 gives thorough mixing of air and fuel for complete, fast and even combustion . . . high fuel economy.

Built to answer every demand. A 145T will give you reliable performance on every job. The long-wearing, ceramic-button clutch, heavy-duty transmission and gear train, sturdy main frame and blade controls, are all built with strength in reserve to handle your toughest dirt moving.

More production with this 3-point combination. (1) High-arched axle lets bigger windrows reach the blade. (2) Extra clearance from circle to cutting edge of ROLL-AWAY moldboard allows lively, high-rolling action of material. (3) Engine power that will really lug to get the job done.

It's a pleasure to operate. The flat, clear deck gives a man plenty of room. Exclusive toggle-type controls engage positively without backlash. There's excellent visibility in all directions. Operators work in comfort . . . produce more on every shift.

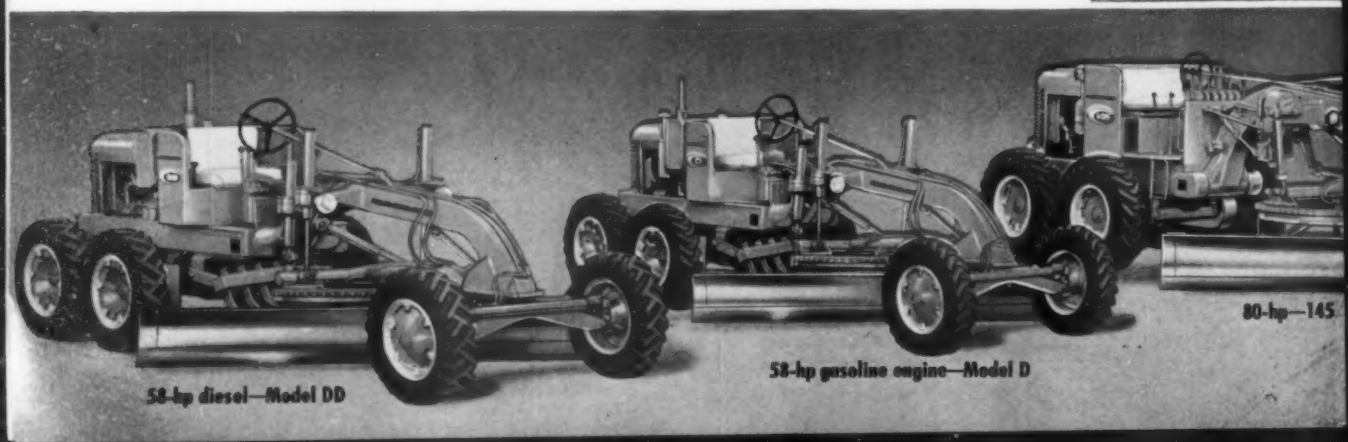
See the new 145T at your dealer . . . or let him arrange a demonstration. You'll like what you see. Allis-Chalmers, Construction Machinery Division, Milwaukee 1, Wis.

STEP UP YOUR POWER
Performance
Operator comfort
Wearability
Ease of maintenance
Reliability
WITH

ALLIS-CHALMERS
POWER FOR A GROWING WORLD

Now available in Allis-Chalmers yellow or Persian Orange at no extra cost.

ROLL-AWAY is an Allis-Chalmers trademark



ALLIS-CHALMERS
4C
145T
105-hp—145T
127-hp—45

Results of a continuing research program
by **DORR-OLIVER**

4 ADVANCED DEVELOPMENTS FOR THE ACTIVATED SLUDGE PROCESS

As important results of a continuing sanitary research program, Dorr-Oliver® now presents four major contributions towards improving the efficiency and simplifying the operation of the activated sludge process.

These advances began as research and development projects and have emerged as tested and proved full scale installations. They climax almost ten years of effort aimed at producing a complete line of aeration and clarification equipment.

They offer the consultant or sanitary engineer new opportunities for more efficient sewage plant design, together with maximum flexibility in meeting particular needs.

Complete technical information and convincing records of operation in several installations are available. In addition, the knowledge and experience of Dorr-Oliver engineers, gained in handling every type of sewage and waste treatment problem, are at your service. Write Dorr-Oliver Incorporated, Stamford, Connecticut – or use the convenient coupon at right.

THE D-O INKA AERATION SYSTEM

A unique new design concept

Based on a new principle of operation utilizing large volumes of low pressure air supplied by simple, low-cost ventilating-type fans, the D-O INKA System provides high oxygen absorption rates, high circulating velocities and optimum mixing conditions. Clog-resistant aeration grids are of an entirely new design. The result is an outstandingly simple system with exceedingly low maintenance and power costs.

THE DORR-OLIVER SPIROVORTEX® SYSTEM

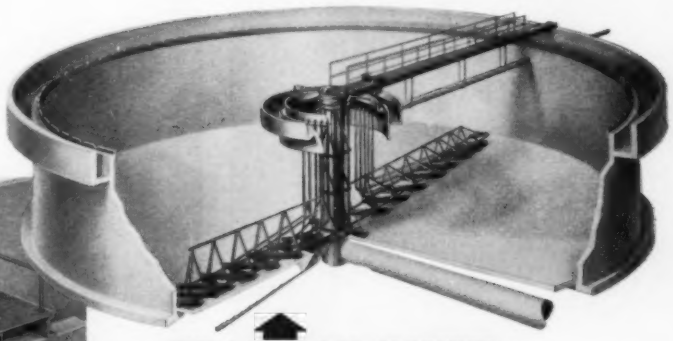
High purification with maximum simplicity

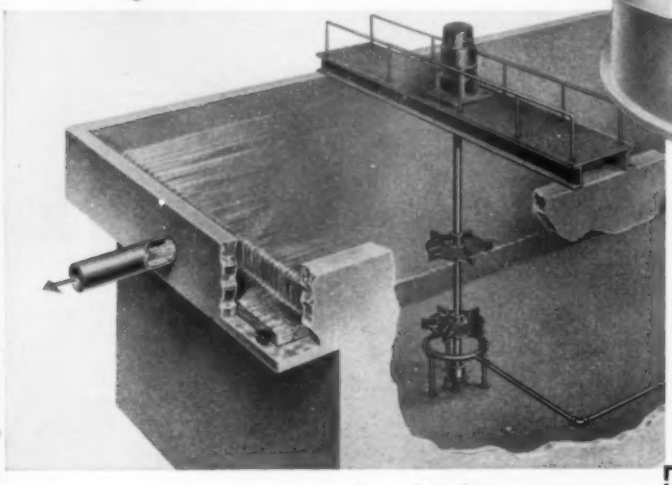
This system combines the simplicity of Biofiltration® with the efficiency of activated sludge treatment. Basic units comprise two SpiroVortex mixing tanks for contacting activated sludge with settled sewage, the Dorr-Oliver-designed SUPERATE® Distributor and Filter and primary and secondary clarifiers. The SpiroVortex system provides an excellent settling sludge and is capable of purification in excess of 90%.

THE D-O® AERATOR

A proven method for meeting increased oxygen demands

The D-O Aerator is a high capacity, motor driven mixing unit specifically designed to meet the high oxygen demands of concentrated activated sludges found in the newer short period processes. Turbine type impellers promote maximum turbulence for high absorption capacity and complete mixing. Units are adapted to installation in all sizes and shapes of tanks.





THE DORR® RSR CLARIFIER

for rapid sludge removal

This unit solves the problem of excessive sludge detention in final clarifiers. Rotating uptake pipes continuously remove high volatile sludge from the tank floor, while grit and low volatiles are raked to a central sump. Quality and quantity of sludge removed from the floor of the clarifier can be readily observed and its rate of removal can be controlled by accessible, simple adjustments.

DORR-OLIVER

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Complete literature available

Technical bulletins covering each of these Dorr-Oliver developments are available to you. For your copies, write to Dorr-Oliver Incorporated, Stamford, Connecticut, or use the coupon at right.

Dorr-Oliver Inc., Stamford, Connecticut

Please send me bulletins on the D-O INKA AERATION SYSTEM (No. 7318), THE D-O AERATOR (No. 7316), THE DORR-OLIVER SPIROVORTEX SYSTEM (No. 7314), AND THE DORR RSR CLARIFIER (No. 6194).

Name_____

Address_____

City_____ State_____

SNOW FIGHTERS!

Clearing four inches of early-morning snow, this Cat No. 12 Motor Grader is one of four owned by Lawrence County, South Dakota. Snowfall averages better than 100 inches per year. Highway Superintendent R. A. Curtis reports each one of the No. 12s clears 50 to 60 miles of road per day, depending on the snowfall. During the summer they're used to maintain the county's 420-mile road system.

Winslow Township, Pa., bought this multi-purpose Cat 922 Wheel Loader last year because it was the "best bid" even though it was not the lowest bid. The best bid, it was felt, was the one that provides years of dependable, low-cost service – low final cost, not just a low price tag. How is the 922 working out? "It's great for plowing snow – much better than a truck," says Newell Sprague, Township Supervisor. "It plows and clears ten miles of road in eight hours – making as many as three or four passes in heavily drifted areas. One big advantage for us is that the 922 can turn around in the width of a road, something no truck can do."

...and you don't have to mothball these Cat-built machines in the spring—they're year-around, multi-purpose road maintenance tools

It's a tough decision. When the snow falls every responsible public official knows that he's got to have effective snow removal equipment out keeping vital roadways open. But does he have to buy expensive special equipment? Can he afford to?

Emphatically no! Many cost-conscious governmental bodies are switching to versatile, year-around Caterpillar Wheel Loaders and Motor Graders for snow removal work. Matched with snow attachments, these powerful rigs are built for blizzard-breaking performance. And taxpayers get a real bargain: *12-months-a-year* road maintenance by Caterpillar equipment . . . for fewer tax dollars. Less equipment to maintain, too.

For handling snow up to six inches deep, many municipalities, counties and townships use Cat Motor Graders with a standard blade and wing. This rig clears a path 20 feet wide in one sweep. For deeper snows a V-type plow can be mounted out front with the wing used to cast snow off to the side. Even with the extra attachments, a Caterpillar grader costs less than a heavy, special snow removal truck, and the grader is much more versatile.

The three new Cat Wheel Loaders work smoothly in snow clearance because of their excellent balance and traction. Buckets, from 1¼ to 4 yd., are fine for dozing and loading out snow. The exclusive Cat Side Dump Buckets are designed for fast, easy truck loading—leave cleared lanes open for traffic while loading. A multi-use tool, they dump to left or forward. In heavy snows a V-type plow can be quickly mounted on Cat Wheel Loaders. With this attachment the loaders can drive into big drifts, lift the plow swiftly—because of Caterpillar's powerful live-action hydraulics—and rip up the snow. They can often break through drifts faster than a big truck with a V-plow.

These loaders and graders make an effective team. Road officials often schedule a motor grader to open streets quickly, with a loader in the rear to load out the snow. Or in the case of bad drifts, a V-plow equipped loader breaks through followed by a grader for the final cleanup. For loading out the snow, the V-plow can be removed from the loader and the bucket replaced in minutes.

If you need snow removal equipment, talk to your Caterpillar Dealer. He can show you the dollars and cents advantage of using versatile equipment—machinery that can handle your snow removal *and* your year-around road maintenance. Do business with the man whose business is built on dependability.

Caterpillar Tractor Co., General Offices, Peoria, Illinois, U. S. A.

CATERPILLAR

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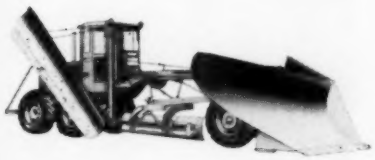
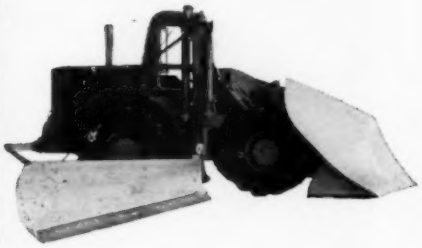
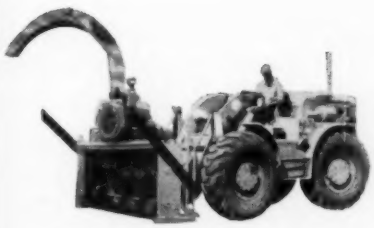
SNOW FIGHTING ATTACHMENTS FOR CATERPILLAR EQUIPMENT



V-type Plows and Wings



Side Dump Buckets



Rotary Snow Plow

Realock Fence won't last as long as the Pyramids but...

... this sturdy chain link fence will give *your* property a lifetime of reliable protection. Made from top grade steel wire, Realock Fence is strong and durable, neat and trim looking. It's recommended where security of buildings, grounds and equipment is essential.

Realock Fence is completely galvanized to assure long-lasting resistance to corrosion, and is available in a variety of types. For a free estimate at no obligation, call the nearest CF&I office.

The Colorado Fuel and Iron Corporation
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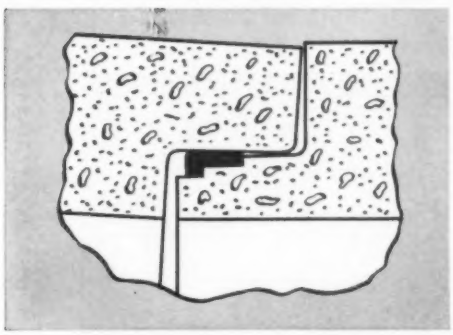
Press-Seal Gaskets MAKE EVERY JOINT Flexible



Temperatures vary, dirt settles, yet with resulting pipe deflection as much as 2° Press-Seal *confined compression* type rubber gasket joints remain effectively sealed and watertight. Correctly designed sewer pipe confines the gasket—compresses it to fill the annular space provided. Only unusual deflection will roll or twist a Press-Seal Rubber Gasket out of this confinement or break the watertight seal.

Press-Seal *confined compression* type gaskets are vulcanized from a special high quality Goodyear compound, using *new materials* only.

Press-Seal gaskets offer you the right material for every sewerage purpose, oil content, acid content, or common sewage. Insist on genuine Press-Seal Gaskets (patented).

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WHY "STIR UP A STORM"

when you want uniform, rapid sludge removal

REX UNITUBE TOW-BRO provides positive, uniform, gentle and rapid sludge removal...with highest possible sludge concentration...*without a storm.*

Because it employs a *gentle suction action only* instead of the conventional plowing or combination plowing and suction action to withdraw sludge, Tow-Bro reduces agitation of the sludge to the absolute minimum. Results: higher solids concentrations...clearer effluent...less volume...most rapid withdrawal rates and maximum possible range of any mechanism. In addition, since sludge is withdrawn at a faster rate ...even with a light sludge blanket...you get greater settling tank capacity and greater operating flexibility. Construction costs are less, too, because no sludge hoppers or center pier is required and tank bottoms are essentially flat.

With Unitube Tow-Bro, a tapered, rectangular header arm revolves slowly around the tank and removes all sludge from the tank bottom in one revolution. Sludge is withdrawn through scientifically spaced and sized orifices in the arm by a gentle suction. Operating costs are reduced since minimum pumping is required to handle sludges of maximum density over the full operating range of withdrawals.

If you're looking for greater capacity...if you're having problems handling activated or trickling filter sludges, or other tricky sludges...investigate Rex Unitube Tow-Bro. For complete facts, send for your copy of Bulletin 315-81. Write CHAIN Belt Company, 4648-W. Greenfield Ave., Milwaukee 1, Wis.

REX®

CHAIN BELT COMPANY

ACID-RESISTANT, WATER-TIGHT, QUICK-COUPLING JOINTS

for straight and offset concrete sewer pipe

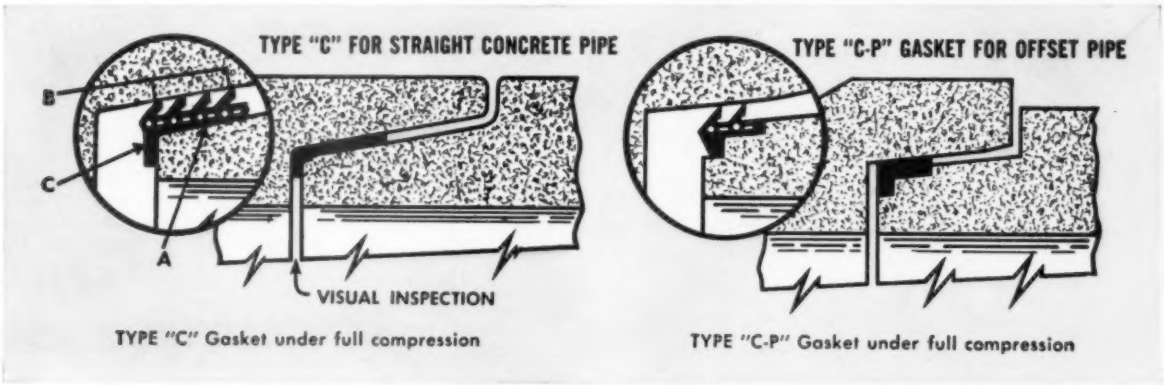
with TYLOX®

"C" SERIES flexible GASKETS

Sanitary Engineers can take advantage of the matchless efficiency of TYLOX Flexible Gaskets for coupling *any* concrete pipe sewer they design . . . because there's a specially designed TYLOX cross-section for *any type* of concrete pipe!

Type "C" Gaskets for straight, and type "C-P" Gaskets for offset pipe, provide the same high performance features you are accustomed to in famous Type "A" Gaskets . . . PLUS a visual inspection feature made possible by a flange which overhangs the edge of the pipe tongue, or tongue offset, according to the type of pipe. On pipe large enough to admit workmen, proof of correct gasket positioning can be obtained by noting whether the inspection flange is evenly seated around the entire circumference of the joint. The larger the pipe, the more important this visual inspection feature becomes.

TYLOX "C" Series Gaskets are made for all pipe sizes, handle head pressures up to 50-feet, and are available in either rubber or neoprene. They may be applied to pipe at the pipe manufacturer's plant, or at the job site. Like all TYLOX Gaskets, they are immune to sewerage and industrial waste acids, and keep joints *water-tight* for the life of the pipe itself.



TYPE "C" Gasket under full compression

TYPE "C-P" Gasket under full compression

"C" Series TYLOX Gaskets consist of base A; sealing fins B; and inspection flange C. In addition to providing the inspection feature, the "locking" effect of the flange holds Gasket in true position as pipe is coupled. Design of the sealing fins is such that horizontal end-thrust forces causing "kickback" in some couplings, are eliminated in Tylox "C" Series Gaskets, assuring full seating and true alignment of pipe.

5147-3

WRITE FOR DATA BROCHURE

Fully illustrated literature contains engineering data and installation information. Get it for your files. See why there are more TYLOX Gaskets specified for low head service than all other types of gaskets combined. Specify TYLOX Flexible Gaskets for jointing your waste disposal pipe lines.

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Here's how TRIDENT Model 60 CUTS YOUR COSTS

Everything new in metering is in Trident Model 60. This is the meter that protects your present and future investment. This is the meter that gives you all the advantages of modern, sealed construction, plus two most important money-saving features. Study these features. You'll see for yourself why Trident Model 60 offers impressive savings in your overall costs. And your system's investment (for which you are responsible) is protected . . . now and in the future. May we show it to you? Phone your Neptune representative, or write today.

1. It can be repaired, reset to zero and recalibrated in your own shop. No need to scrap half a meter just because a minor part is damaged.

2. Older Trident meters can be modernized. Both Model 60's sealed register and sealed gear train are interchangeable with present Trident parts. There's no obsolescence.

Non-fogging sealed register, can be repaired, re-sealed, re-dehumidified. Replaceable crystal. Powerful shielded magnetic drive. Has sweep test hand. Wheels can be reset to zero . . . a boon to utilities who turn repaired meters back to zero for good public relations.

Change gears . . . exclusive among hermetically sealed meters . . . permit adjustment of registration. No need to lose income just because of a little wear or mineral deposits. No need to scrap expensive major components for lack of change gears.

Totally sealed gear train. Water never touches gears. No corrosion. No water or oil leaks. Sealed and lubricated for life. Powerful shielded magnetic drive.

Quiet Trident flat-disc measuring element. The finest, most wear-resistant and trouble-free principle. Remarkably sensitive to "leak type" low flows. Stays sensitive longer because it's precision machined to minimize effects of wear or deposits.

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SEPTEMBER 1961

The American City

We Rent Our Equipment

. . . to the operating departments and provide a self-financing system which insures good maintenance and prompt replacement of outworn parts

By **GORDON E. BODIEN**, City Engineer
and **ROBERT G. BRUCE**, Analyst
Minneapolis, Minn.

The water department rents this crane at a special rate of $275 a month.

Sweepers operate 16 hours a day, thereby wearing out before becoming outmoded.

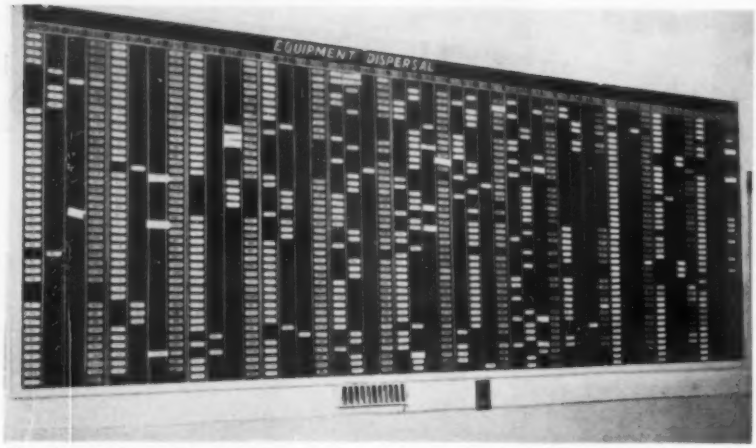
Since its inception in 1929, the Equipment Division of the City of Minneapolis, Minn., has improved its procurement and maintenance practices and expanded its mission until we now are able to furnish 1,000 pieces of equipment to virtually all city departments at intelligent rental rates.

The division operates under the auspices of the Engineer's Department and furnishes the vehicles and equipment for all other city departments except the Park and Library Boards. All departments, including the Minneapolis Independent School District, participate in the purchasing program. The park, the library and the school divisions contract quite often with the paving division for services.

Before 1929, each of Minneapolis' 13 wards bought, housed, maintained and used its own equipment. The result was an absence of maintenance and service standards and a conglomeration of types and colors. To correct these deficiencies and to inject the economies of mass purchasing, the council created the Equipment Division under the City Engineer's Department. The functions of this department include the streets, water, sewers, traffic, bridges, testing and others, making it comparable to Public Works Departments elsewhere.

Over a period of time the new division progressed, finding better

These identical surveyors' vehicles rent for $90 a month.



The dispatching office at the central equipment shop employs this board for control.

maintenance and purchasing methods as well as upgrading and standardizing the equipment itself. As other departments observed the tremendous improvement in equipment and methods at economical rates, they requested the division to assume their vehicles and provide the related services. Although the Police Department has used the maintenance and repair facilities since 1931, only this year did they begin using the purchasing division. Another late addition was the Fire Department in 1960.

No Direct Appropriation

The Equipment Division obtains no appropriation from the council directly. It derives its revenue from rentals to other departments. These receipts now total approximately $3,000,000 per year. An operation and maintenance fund includes labor, building rental, maintenance and overhead costs. The capital fund purchases new equipment in quantities which average about $500,000 yearly.

Vehicle procurement and replacement practices play a significant role in fleet investment and operating expenses. Mass equipment purchasing under rigid specifications and on a competitive-bid basis results in a standardization of vehicles and very favorable prices. The city accepts a single bid for all automotive products each year which guarantees that every automobile and every truck in each category will be the same make and model. This standardization aids the personnel training program by limiting the number of different models with which mechanics and technicians must become familiar. It also results in a smaller variety in the inventory of spare parts.

Decisions regarding the procurement of equipment fall under one of two policies. The first determines the purchase of general-use equipment and the other, the purchase of specialized equipment.

Two Classes

The general-equipment classification includes all multi-use units which are rented by more than one department during the year. This category consists of automobiles, trucks, transit mixers, air compressors, truck cranes and motor graders, to name only a few. A general analysis of departmental requests, budgets and future programs discovers the need for the number of units in each category and size.

Specialized equipment includes all single-use units which the using department requests for a specific function or job. Equipment such as bituminous finishers, street sweepers and flushers, refuse trucks, fire apparatus, police cars, and many other items make up this classification.

The using department requests the Equipment Division to acquire the necessary units for a specific purpose and guarantees its use for a certain time. Division personnel analyze this request and determine an estimated rental rate. We then compare this rate with the cost of renting this equipment from an outside source. If city ownership appears to be more economical, the division acquires the unit; if not, we make outside-rental arrangements for the department. When purchasing this type of equipment we depreciate it to salvage value within the estimated hours of use provided we do not anticipate that there will be additional work for the particular piece of equipment.

Budget planning for vehicle replacement requires special care. Administration to take advantage of current market conditions is a necessity. The factors we use in our replacement policies are:

- **Ownership Expense. These are costs which are a function of time and include depreciation, procurement costs and alteration costs.**
- **Maintenance Expenses. These are shop expenses and include labor, materials and overhead costs which are necessary to keep a vehicle in operation but do not include operating expenses.**
- **Safety and Morale Factors. These factors include the greater reliability,**

REPRESENTATIVE RENTAL RATES

Equipment	Rate Per Hour with operator	Rate Per Hour without operator
Air compressor, Jaeger Model 125	$ 5.75	$2.65
Crane, Bay City ¾-yard	$11.50	$8.00
Heater-planer, Littleford-Clarkmoore	$13.25	$9.00
Tractor-loader, Hough HR 4WD	$ 9.00	$5.70
Tractor-hoe-loader, International 1-460	$ 8.50	$5.25
Tractor-mower, Case	$ 6.90	$3.75
Patrol-grader, Caterpillar ‡12	$ 9.00	$5.50
Oil distributor, Ford, 22,000 GVW	$ 7.60	$4.85
Dump truck, Ford F-750, 19,000 GVW	$ 5.75	$2.95
Pneumatic roller, Tampo, 7-ton	$ 7.75	$4.45
Steamer, Bros SG 60 TA	$ 9.10	$6.20
Sand/salt spreader, FOX	----	$2.00
Rotary snow plow, Bros A-66	----	$2.60
Welder, Lincoln	----	$1.25
Refuse collector, Ford C550, 18,000 GVW	----	*

* $0.20 a mile without operator plus $50 a month depreciation.

safety and performance of newer vehicles; their improved appearance and better driver care as well as the improved morale of the operators.

The Equipment Division maintains complete and accurate records of all equipment costs. Vehicles of a common type, model and year, form separate inventory groups for cost analysis. A review of these costs at the end of each calendar year when the major inventory is available determines total unit costs, revenue and hours of operation. Comparisons with preceding years provide us with a complete picture of the status and condition of each piece of equipment.

Sweepers are high-maintenance-cost items. We examine the charges per operating hour closely and often. Our sweepers run 16 hours a day so that they will wear out before technology outmodes them. Many new improvements which include rubber chains, rubber sprockets and other innovations reduce maintenance costs to such a degree that sound business practice dictates the necessity of taking advantage of these as soon as possible. Maintenance costs govern replacements which we make in groups of three or more at one time.

The hourly rental rates for sweepers, as for other specialized construction equipment, include skilled operators which the Equipment Division employs and all operating supplies. The current rental rate with operator is $13.15 per hour. Inventory Group No. 46 now includes 13 Wayne and Mobil sweepers, none of which is more than five years old.

A mileage basis, usually 85,000 to 100,000, determines the useful life of police squad cars. They normally reach this figure in about two years. We replace other passenger cars at 60,000 miles, rotating them if necessary to accumulate this travel within six years, the maximum desirable age.

Monthly Rental

Passenger cars rent by the month without operators. An entire year's supply, which we now purchase each January, consists of compact and standard autos. Corvairs and Larks make up the compact fleet; Fords and Chevrolets make up the standard fleet.

Specifications require the new passenger vehicles to have automatic transmissions and six cylinders. We specify the former because our records indicate no appreciable difference in gas mileage and there are no clutch repairs. They also return most of the extra cost when they are traded in.

The traffic department rents this piece of specialized equipment for $110 a month.

The six-cylinder requirement for passenger cars is in the interests of economy. Compacts rent monthly on a mileage-traveled basis as follows:

Under	**1,000**	**$ 70**
Over	**1,000**	**$ 80**
Over	**1,500**	**$100**
Over	**2,000**	**$120**

These rates are $10 less than those for standard autos and include all supplies and maintenance. We now omit department designations on all except police and fire autos because we assign them to various departments when it is necessary to accumulate sufficient mileage.

Truck replacement is on an age and deterioration basis. We attempt to trade all vehicles before they require major overhauls. We find the average age of the trucks at replacement time to be:

Large trucks, ten years
Medium trucks, eight years
Pickup trucks, six years

The life of specialized equipment depends on condition, efficiency and obsolescence. The use of an obsolete piece of construction equipment could easily cost the job more than its modern replacement would be worth. The equipment capacity and

Only a few months old, this finishing machine aids street construction.

cycle of operation must conform to the job schedule and specifications.

Because Engineering Department personnel perform most street construction and reconstruction except for extremely large projects, the Equipment Division contains a substantial amount of construction equipment. This includes three Barber-Greene bituminous pavers which rent for $12.50 per hour with operator and a Flex Plane concrete finisher at the same rate. Cranes, dozers, motor patrols, air compressors and many other items fill out the construction-equipment list. Other departments also rent most of these items.

Vehicle Housing

The Land and Buildings Department buys property and constructs buildings when necessary and economically feasible. They then rent these buildings to other departments and the Equipment Division at sensible rates. Thus, our equipment-rental rates also reflect housing costs.

We now enjoy the use of eight major garages, of which five are less than 13 years old. Two centrally located shops house all major overhaul operations, the dispatching center and offices. Four others, centrally located in each quadrant, supply the major storage space for these areas.

The newest parking ramp and garage is less than a block from City Hall and includes 550 stalls. It houses the maintenance and service facilities for police, fire and pool vehicles. We pay $20 monthly for a heated space and $10 for a roof stall. These fees will fully depreciate the building in 30 years. Employees who receive mileage payments for the use of private cars rent the majority of these spaces. Other units of the city government also lease some of these stalls.

We distribute each year a book which lists all available equipment and vehicles by make and model number in 125 different categories. The 36 pages in the current edition include an index, garage locations, instruction for rentals, and rates with and without operators.

Our accumulated data prove that the centrally operated vehicle-and-equipment-rental division provides reliable service with economical operation. Many cities are switching to motor pools but few include functions as varied as the police and fire departments. The experience of Minneapolis indicates that this is not only feasible but is, indeed, desirable from a standpoint of service and economy. ◄◄

More Efficient Weed Spraying

The weed-spraying operation no longer requires the tedious effort that was formerly necessary. A little ingenuity and a few dollars worth of equipment have reduced our labor costs approximately 60%.

The city bears the responsibility for spraying weeds on municipal property and state-highway rights-of-way. A man with a hand-operated unit formerly spent five days spraying weeds adjacent to the 500 signs along a state road. The two-man crew now completes this task in one day.

To accelerate our production we obtained the following equipment:

- **A discarded aluminum beer keg for storage of the weed killer under pressure.**
- **Two pressure tanks attached to the compressor.**
- **A 3-hp Briggs & Stratton engine.**
- **A pressure regulator.**

We dismembered an old paint spray unit and attached the hose to the pressure storage tank at one end and to the nozzle of our original hand-operated sprayer at the other. Shop mechanics performed the few simple operations necessary to ready the system for action.

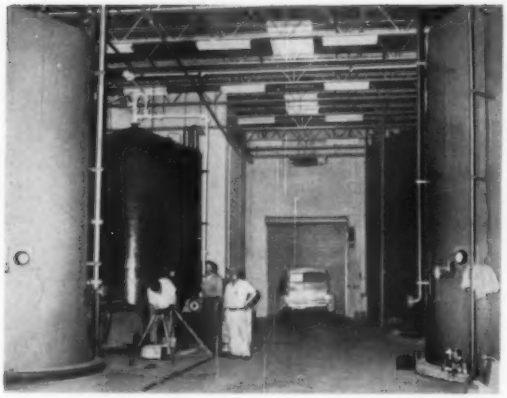
It was an instantaneous success. With the compressor and the tanks on the back of a truck, one man now sprays weeded areas as fast as he is able to walk, carrying only the spray nozzle which weighs less than three pounds. The truck driver keeps pace with the man on foot, the long hose allowing the sprayer a wide latitude.

In the past years one man used to carry a small tank of weed killer on his back. If he didn't have a truck of his own, someone had to supply him continually with additional material. If he kept a truck with him, he could store extra drums on the rear but would often have to retrace his steps without productive effort. The slowness of the operation did not justify assigning a driver.

With the new, more efficient process we now accomplish the regular spring and fall spraying in substantially less time and obtain better results. The operators mix one part of Acme Weed Killer which contains 42.5% sodium arsenate, with 40 parts of water. This mixture kills weeds where they usually thrive, around parking meter posts, sign posts and fences. They warn, however, against using it indiscriminately, because it also kills grass and flowers.

GORDON D. HUNSAKER, *Sup't.*
Parks and Recreation Dept.
Hazel Park, Mich.

Mechanizing the weed-spraying task reduced the cost.



Steel tanks, lined and unlined, replace the dry-chemical storage tanks found in most large water-treatment plants.

Soda ash, received by rail in dry form, is stored in slurry form in these two silo-like tanks; the large pipe leading into the top of each tank is the slurrifier.

Chemicals in Liquid Form Only

. . . treat Monongahela River water at the new plant of the South Pittsburgh Water Company

By **E. H. ALDRICH***

A visitor to the new Shire Oaks Station of the South Pittsburgh Water Company will look in vain for the customary dry-chemical feeders and overhead storage hoppers for chemicals. Lined and unlined steel tanks and a battery of Milton Roy metering pumps take their place; chemicals, except chlorine, are pumped into the system.

The plant is unique in that it employs nine different chemicals at times, all in liquid form. However, it also differs from other plants:

- **By being the first water plant in the country to store soda ash in slurry form.**
- **By occupying an unusually small site; 0.06 acres per mgd of ultimate capacity.**
- **By the centralization of all controls into one room, having a gross area of less than 1,400 square feet.**

Water in the Monongahela River is rather continuously polluted with acid mine wastes. Proper treatment calls for acid neutralization, coagulation and, at times, water softening. The Shire Oaks Station meets these special problems.

Caustic soda, alum, sulfuric acid and hydrofluosilicic acid are purchased and stored in liquid state, while carbon is purchased dry and turned into a slurry at the plant. Sodium chlorite and Calgon are stored dry but fed in solution form and chlorine, purchased in one-ton containers in the liquid and gaseous state, is fed by standard Wallace & Tiernan chlorinators.

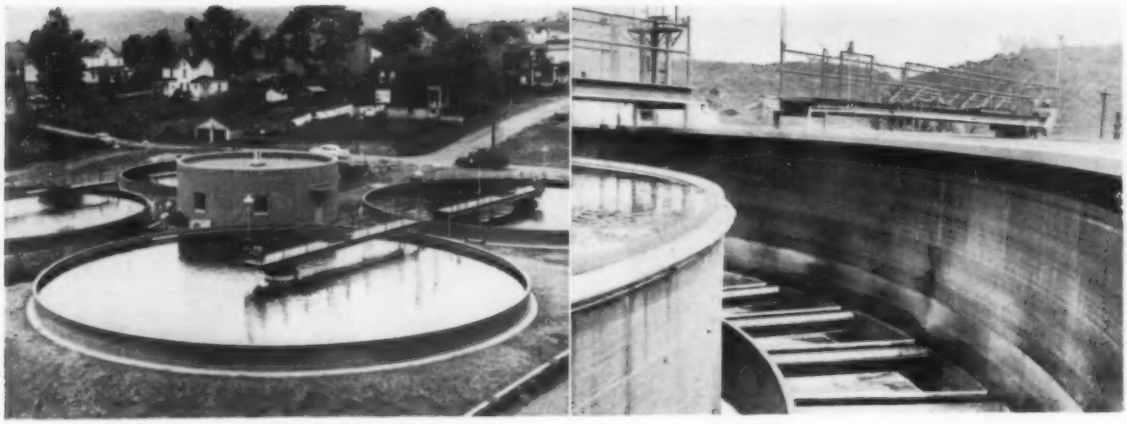
E. H. Aldrich

A "first" in the water-works field is the plant's soda-ash storage system, designed by the Diamond Alkali Company. A vacuum pump removes the dry soda ash from rail cars or trucks and discharges the material into a slurrifier and then to one of two storage tanks. Through the use of a recycling pump, the soda ash is slurried into a monohydrate form by mixing with the soda-ash solution being repumped into the slurrifier. Either steam or hot water, and at times both, applied through a bottom sparging system, keeps the temperature above 95.7°F, the freezing point of the monohydrate. This sparging produces a layer of saturated solution in the top of the tank which is 30 $\pm$ 0.5% soda-ash solution. Soda ash can be added to the tank until 92% of the tank's volume is slurry and 8% is saturated solution.

Space Saving

This method of storage produces considerable saving in storage space. A 20-foot-diameter tank with 20 feet usable height holds 176 tons of soda ash stored in slurry form, with

* Mr. Aldrich formerly served as Chief Engineer for the American Water Works Service Company, Inc., and is now vice-president and engineer consultant to the company. He conceived and designed the purification unit which utilizes a single tank for both pre-treatment and filtration.



The four purification units (left) combine the settling chamber and filter in a single basin (right).

each gallon of liquid containing 7.5 pounds of soda ash. A similar volume stores only 110 tons of dry soda ash.

Centralized Control

Five walls of the hexagon-shaped central control room contain control panels. A three-sided desk-type console in the center of the room provides for remote control of all mechanical equipment regardless of location.

The wall facing the entrance of the room contains a complete graphic representation of the plant. This 14-foot-long panel presents the plant functions starting at the river on the left to the distribution system on the right. Miniature pictures of the equipment represents each item.

Starting at the intake, the operator can determine the elevation of the water in the intake compared to the river pool stage and the flow in million gallons of raw water daily through the venturi meter. The chemical building diagram shows the application points of all chemicals. A colored line flowing into the main header represents each chemical; with a backlighted nameplate to show whether or not it is actually being added to the water. The color used for each chemical on the panel is carried throughout the plant with each chemical pipe painted the same color as shown on the panel.

Color lines and lights at the purification units show whether or not the chemical is being applied directly into the settling compartment. A graphic picture of the wash-water tank is connected to the purification unit and within the confines of each tank a level-gauge indicator shows the height of the water therein.

Following the effluent from the purification units to the clearwell, lights and colored lines again indicate the application of post-filtration chemicals. A tank with a level gauge represents the clearwell and shows the height of the water in the clearwell.

From the clearwell the header passes to the high-service pump station and shows the water passing through the pumps and the combined flow from the station, measured by the high-service venturi meter. A secondary line shows the wash-water pump taking suction from the clearwell and pumping to the wash-water tank.

Proceeding from the plant, the header continues to the relay station storage tanks, with the relay tank level again showing within the symbol. Leaving the tanks, the diagram shows the relay pumps, with the combined flow from the station indicated and recorded on the panel. The diagram also includes the line to the Rocky Ridge storage tanks, with an indicating level gauge in the outline of the tank. At this point the line leads into the distribution system.

Provision for the Future

Although the plant as presently built represents only one-quarter of the ultimate size, the control panel arrangement provides space for all additional components. Items for complete plant control include:

- **A pneumatic loading station to control the output of the plant. When this control is set at a pre-determined rate, the filter-effluent controllers maintain this rate, even though a filter is out of service or being washed.**
- **Backlighted nameplates to indicate excessive loss of head in each filter and also indicate when a filter is being washed.**
- **Selector switch to choose filter to be washed.**
- **Audible alarm and light signals to alert operator when washing cycle is approaching completion.**
- **Rate setters for high and low wash rate.**
- **Tester for all signal lamps.**
- **Plant discharge pressure.**

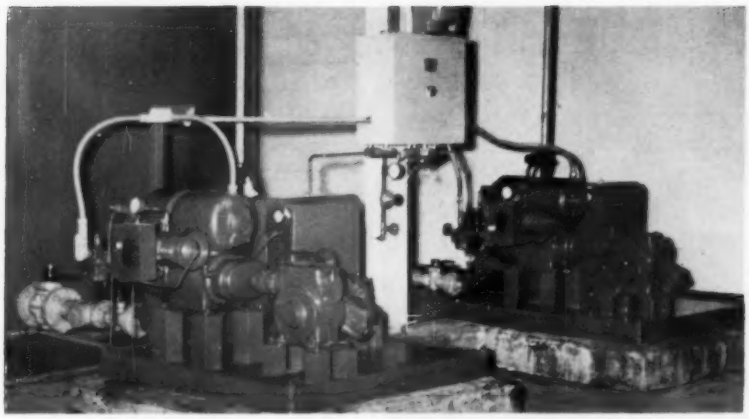
Four filter control panels, located to the left of the graphic panel, contain the following items for each of the four purification units:

- **Backlighted nameplates showing the position of all valves pertaining to each filter.**
- **Selector switch to open and close valves manually or to put them on automatic operation.**
- **Indicating level gauge giving height of water above weir in filter, measured by inches, and manual pneumatic loading station to set filter operating level where desired.**
- **Loss of head and rate of flow indicating and recording instruments.**
- **Selector switch for automatic or manual operation of complete panel.**
- **Lamp tester.**

The chemical-feed panel on the left, as you enter the control room, provides chemical control. Basically a graphic panel, it shows the actual feed of chemicals. All chemicals being fed, except chlorine, are controlled from this board.

From this panel the operator has complete control of most chemical feed. Starting with the raw-water flow indicator, the panel serves the following functions:

- **Indicates, records and totalizes**



The Shire Oaks plant uses pumps rather than dry feeders to feed eight of the nine chemicals used in the treatment process.

the amount of chemicals being fed.

- **Allows manual adjustment of pump stroke by a 3- to 15-psi air signal and gives indication that flow is changing with adjustment.**
- **Backlighted nameplates indicate which chemical pumps are running.**
- **Indicates and records the pH of the chemically treated water which, in turn, adjusts the stroke of caustic soda pumps to control pH, as required.**
- **Allows individual adjustment of sulfuric acid to each purification unit separately.**
- **Records the pH of the raw water, finished water and water on top of each filter by means of Beckman pH meters.**
- **Shows graphically the point of application of each chemical, using the same color coding carried throughout the plant.**
- **Provides space for future expansion to eight units, with additional space on the right wall for a second panel of eight units.**

Chemical Control

To provide the basic chemical control, the raw-water venturi meter transmits a 3- to 15-psi air signal to the flow recorder. This signal, taken from the control board, paces the speed of the pump that feeds each chemical. When the pressure drops below 3 psi, the pump does not run; if it rises to 15 psi, the pump operates at maximum speed. Between these limits the flow of liquid becomes proportional to the speed of the pump.

The stroke of the pump, also variable, changes the chemical dose; the operator can adjust this from the chemical panel by manually setting a control knob to the desired percentage of chemical dose. Moving the control knob changes the air signal between 3 and 15 pounds, which in turn changes the stroke adjustment on the pump. Any change in air signal gives a proportional change in the stroke.

Both speed and stroke are therefore adjustable over a range of 3- to 15-psi air pressure. These two air pressures also feed into an averaging device that indicates and records the amount of chemical being fed into the system. This recorder is geared in such a way that any given average speed-stroke air signal represents so many pounds of chemicals.

The system just described controls liquid alum, hydrofluosilicic acid, carbon slurry and soda-ash feed. The same type system feeds caustic soda, with the exception that it is completely automatic. After setting the desired pH on the controls, any variances in pH of the chemically treated water will cause an automatic adjustment of the caustic pump stroke, which in turn changes the caustic soda feed rate.

Sulfuric acid, fed separately into each purification unit, is controlled independently from the control panel. Each unit has its own manual loading station by which the operator can adjust the amount of feed. A 3- to 15-psi air signal regulates a diaphragm valve controlling the amount of liquid allowed to pass to the filter.

Calgon and sodium chlorite, in the form of chlorine dioxide solution, when required, are pumped in a liquid form into the clearwell. The pumps are not automatically controlled but pump at a set rate, as required.

Chlorine is fed into both the raw water and the filtered water by chlorinators and the chlorine residual of the filtered water is automatically analyzed by chlorine residual recorders.

From the desk-type console, the operator can control functions at the plant and at the intake and relay pumping stations simply by pushing buttons. An Applied Science transmitter operates in conjunction with three receivers and utilizes tone signals transmitted over a pair of telephone wires.

A scanning system and memory device built into the system checks the operation of the equipment or retains a given operation until the equipment is clear. The equipment holds, in its proper place, any signal put into the transmitter while another tone is being transmitted, until such time as the transmitter is clear. When the transmitter requests a mechanical operation, such as starting a pump, a confirming signal returns to the console to light a backlighted nameplate indicating that pump is running. If at any time something happens to the remote equipment which causes it to cease functioning, the light on the console blinks continually and an alarm bell alerts the operator.

The operator may, by pushing a scan button, make the system go through a complete check of all functions.

The left side of the console performs the following functions at the intake:

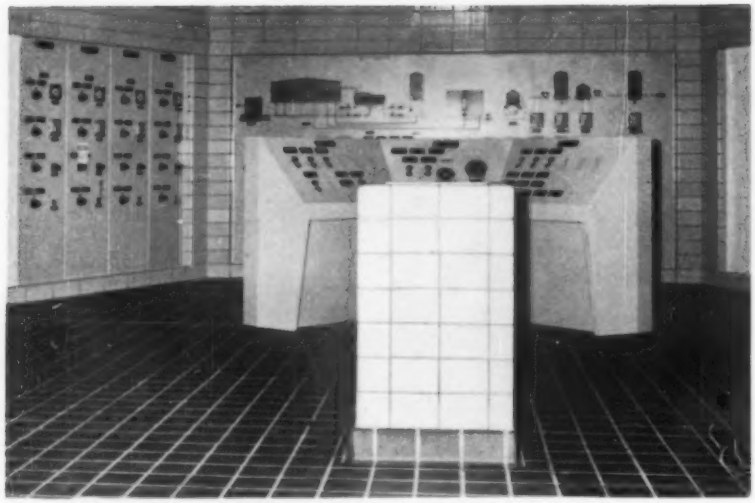
- **Starts and stops all pumps and lights a namplate to show which pump is running.**
- **Starts and stops the traveling screen and screen wash and lights a nameplate to show which screen is running.**
- **Lights a nameplate and sounds an alarm for transmission failure, low pool stage and warning to wash the screen.**

The center section of the console performs the following functions at the main station:

- **Starts and stops the wash-water pumps and lights a nameplate indicating which high-service or wash-water pump is running.**
- **Controls the speed of the one variable speed high-service pump.**
- **Contains a telephone and clock.**
- **Provides buttons to test lights, silence alarm, stop flashing lights and scan complete system.**

The right-hand section of the console performs the following functions at the relay station:

- **Starts and stops all relay pumps**



From this room the operator can perform every control function needed to operate the plant, including remote elements.

and lights a nameplate indicating which pump is running.

• Indicates, with backlighted nameplate, if pump discharge valves are open or closed.

• Indicates, with backlighted nameplate, transmission failure, under-frequency or power breaker open.

Engineers of the Minneapolis-Honeywell Regulator Company and the American Water Works Service Company developed the entire supervisory control system, including operating panels and console, and Brown Instrument Division of Minneapolis-Honeywell furnished and erected the control panels and most of the equipment.

American Water Works Service Company personnel who played prominent roles in the conception and construction of the plant and related facilities included H. J. Carlock, chief design engineer; M. E. Flentje, chief sanitary engineer; J. T. Kearns, sanitary engineer, and E. F. Meyer, chief construction engineer.

Expansion

The plant has a capacity of 25 mgd with provision incorporated in the design to allow for future expansion to 100 mgd. River water enters the raw-water-pump well through a sectional intake providing for three pumps in each section. A bar rack and a Chain Belt traveling water screen remove large particles. Three Byron Jackson vertical pumps driven by U. S. motors, two rated at 10 mgd and one at 5 mgd at 60-foot head, pump the water to the purification plant.

The pumps discharge through a 42-inch line about 1,000 feet long tunneled under 19 railroad tracks to a chemical vault where most all pre-treatment chemicals are added. Leaving the chemical vault, the treated water line proceeds through a round valve house where it connects to four influent lines, each serving a purification unit.

The four purification units are each constructed of three concentric steel shells containing a center column through which the water is fed into the unit, and in which soda ash is applied. The soda-ash solution feeds directly into the sludge over the distributor arms. The center tank, the settling compartment, is 60 feet in diameter and contains a Dorr-Oliver HydroTreator mechanism having four arms, two of which are equipped with sludge rakes to convey settled sludge to the center well. This waste concentrated sludge is pumped to an abandoned mine some distance away. From the settling compartment the water flows over a weir into a 6½-foot wide filter compartment and variable-width wash-water gullet. The addition of sulfuric acid to the water as it travels over the settling compartment weir, converts the insoluble carbonates to soluble bicarbonates. The filter bed consists of 30 inches of sand and 12 inches of gravel over a Wheeler filter bottom. Two concentric steel shells 64½ feet and 77½ feet in diameter form the filter. Constructing the 64½-foot diameter tank with its centerline offset six inches from the center of the 69-foot diameter tank provided the wash gullet. This drain gullet which is backfilled with concrete, varies in width from 1¾ feet to 2¾ feet and slopes to the drain. Radial wash-water troughs are provided in the filter compartment. The water leaving the filter compartment passes through a rate controller formed by combining a Burgess-Manning venturi tube with a Henry Pratt butterfly valve. All filter valves are pneumatically controlled, Pratt rubber-seated butterfly valves.

A 42-inch effluent header connects the purification units with the 1,000,000-gallon clearwell constructed under the control building. The application of post-filtration chemical treatment takes place at the entrance to the clearwell.

The control building also contains the high-service pump room, providing space for six pumps. Present facilities include three Electric Machinery motor-driven Byron Jackson vertical pumps—two rated at 10 mgd and one variable speed unit rated 5 to 10 mgd at 420-foot head. The pumps discharge into a 48-inch Lock Joint prestressed-concrete line leading to the relay station one mile away at an elevation some 400 feet higher.

Relay Station

The relay station presently consists of a 5,000,000-gallon ground-level storage tank and a pump building. Space provisions and pipe arrangements allow for expansion to four 5,000,000-gallon tanks. The building houses three General Electric motor-driven DeLaval horizontal centrifugal pumps, each rated at 10 mgd, with a present total horsepower of 2,100. These pumps discharge into the distribution system and connect through a 48-inch main to two steel 5,000,000-gallon ground storage tanks at Rocky Ridge, some nine miles from the station, and the highest point in the system.

The entire plant site, including intake and provision for future additions to 100 mgd capacity, contains an area of six acres. This breaks down to only 0.06 acres per mgd capacity—an unusually small area.

The Shire Oaks Station is one of two treatment plants operated by the South Pittsburgh Water Company of which K. B. Earnhardt is vice-president and manager, R. H. Martin is assistant manager, F. R. Perrin is superintendent of purification, and G. B. Upton is chief engineer. Operating personnel of the Shire Oaks Station consists of the plant superintendent, George L. Rowland, two men (an operator and an assistant operator) per shift, and two maintenance men working the day shift five days a week. ◄◄

Santa Monica Auditorium Hosts the Oscars

By **JOHN T. WEBB**
Auditorium Manager
and **R. D. JONES**
Senior Admin. Assistant

Santa Monica's spectacular municipal auditorium provides a fitting place for Hollywood's glamorous, suspense-filled "Oscar" awards.

Last April, the Academy of Motion Picture Arts and Sciences presented its coveted "Oscar" awards, replete with glamour queens, searchlight barrages and network television. However, this Hollywood extravaganza took place in the Santa Monica municipal auditorium, more than ten miles from Hollywood.

The Civic Auditorium is now well into its third year of operation. The building and its 8.5-acre site took their first steps into a reality when, in November of 1954, the people approved (by a 5:1 vote) a bond issue of $2,895,000 to finance the cost over a period of 15 years.

Building Cost

Upon completion, the building and site represented an investment of $3,410,000. Surplus reserve revenues paid the difference of $515,000 between actual costs and the bond issue.

To date, the auditorium has shown an operating loss. But the financial picture is not completely bleak.

The net operating loss in 1959-60 was less than in the first year of operation, ($34,007 compared to $38,499). These calculations involve only operating, not actual, loss since they do not include such items as building depreciation and land appreciation.

However, the Auditorium imparts intangible values as both an illustration of community endeavor and a device for municipal publicity, for it attracts more than 300,000 persons a year to Santa Monica. Many come for conventions which extend over three or more days. Many others come only for an evening's entertainment.

The Civic Auditorium seats 2,700 persons in its main room. This same room will seat 1,800 diners. The stage in the main room is the second largest in Southern California, being 120 feet wide and 42 feet deep, with the proscenium opening 65 feet wide and 31 feet high. The stage is equipped with complete operational facilities including a switchboard, an overhead, fly loft and spotlight gallery, dressing rooms, and so forth.

The building accommodates approximately 150 standard 8x10-foot exhibit booths, with utilities available through removable panels recessed in the floor. A complete catering kitchen is in the building and three built-in refreshment booths as well.

When the auditorium first opened, the parking lots provided 850 stalls on the main lot and 1,000 more one block away. However, these soon proved inadequate, since many large events have outside tent displays. Consequently, the city acquired an additional parking area across the street from the Auditorium. The 240 spaces provided by the new lot will offset the stalls taken on occasion from the main lot for special display purposes.

A tilting floor, equipped with removable seats, makes possible the presentation of "flat" trade shows as well as theatrical productions. An adjacent meeting room with seven sound resistant dividers gives an elasticity to the operation that is most effective. ◄◄

A Sicard snow blower scoops up a windrow of cracked ice to give the new mobile snow melter a winter-type test in summer.

New York City's Mobile Snow Melter

. . . provides a way to beat the high cost of hauling snow; this article gives background, economics, and development details

By **CASIMIR A. ROGUS**
Director of Engineering
Department of Sanitation

New York City's unprecedented winter hardships of 1960-61—a total snow precipitation of 57.4 inches and 17 consecutive days of sub-freezing temperatures — prompted Paul R. Screvane, former commissioner and now deputy mayor, to direct a study of possible improvements. For a better understanding of the problems involved and the solutions studied please consider the following New York City circumstances:

1) The 6,000 miles of streets are covered each winter with an average total precipitation of about 30 inches. However, last winter's precipitation of 57 inches increased the snow load to about 470,000,000 cubic yards or 50 million tons—the equivalent of a mountain 2,300 feet high.

2) Rock salt provides the primary snow and ice control measure for precipitations below four inches and as an auxiliary aid in the case of larger precipitations. Each winter's usage in the preceding five years has averaged 56,000 tons. That for 1960-61 exceeded 84,000 tons.

3) Parked and stalled vehicles greatly complicate the snow-removal problem. Last winter's snow operations required digging out and towing away about 55,000 vehicles of which 1,500 were trucks and buses.

The abnormal winter weather conditions of 1960-61 cost the city $24,170,000, in direct expenditures for snow removal and well over $50,000,000 in indirect costs through losses to business and industry. Thus the search for better snow-removal procedures has a substantial financial prize.

Our studies led again to a reassessment of the following five snow-melting methods:

1) Melting in place without plowing.
2) Melting in street gutters after plowing into windrows.
3) Melting by direct flame.
4) Melting in pits or catch basins.
5) Melting in mobile units.

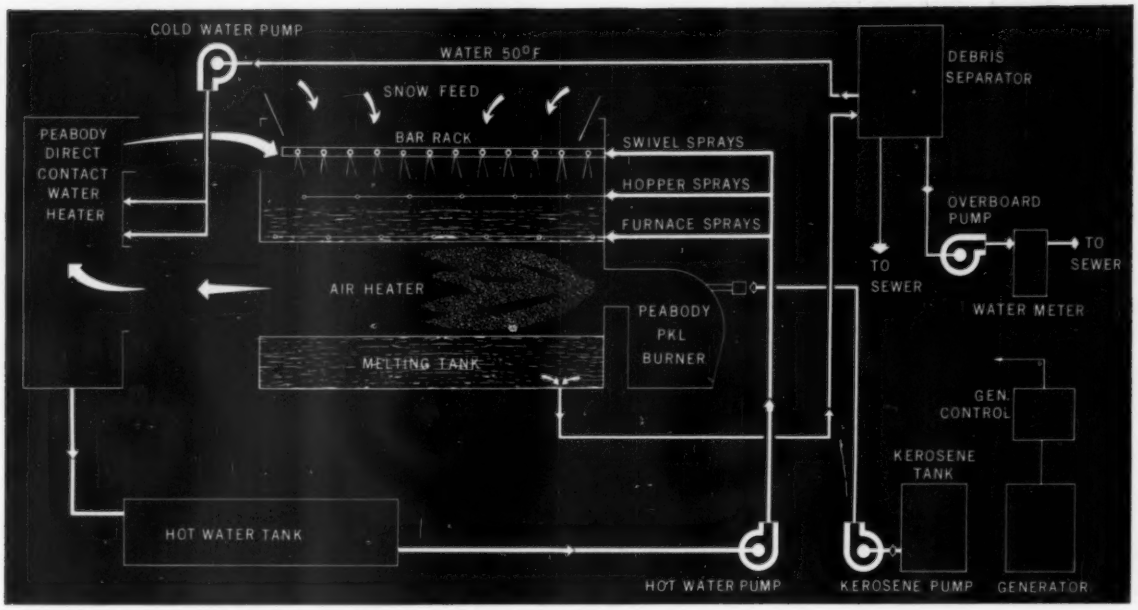
Method 1 requires a radiant heating system imbedded in the pavement and designed to provide continuous surface temperatures of 50° to 60°F. These systems may consist of:

- **pipe coils circulating freeze-resistant solutions at about 120° F.**
- **suitable ducts circulating hot air.**
- **electric wires or cables radiating 150° temperatures.**

The pipe-coil systems generally have been limited to relatively small areas such as ramps, pedestrian crossings, sidewalks, and garage floors. Furthermore costly and difficult maintenance and repairs have forced abandonment of many.

Radiant heating with hot-air ducts, although used as far back as the Roman and medieval times, is inherently inefficient and difficult to control, particularly in larger installations. Utilization of electrical energy for heating and melting is enjoying new interest because of progressively decreasing power costs and other inherent advantages.

In general the major disadvantages of Method I consist of prohibitive initial costs, high maintenance



The new snow melter performs in accordance with this flow diagram, explained in the text on page 101.

and repair costs, difficulty of avoiding innumerable sub-surface obstacles, and blanketing utilities (water, sewer and steam lines, gas and electric conduits, telephone and air lines) thereby defeating ready accessibility for repair purposes.

Melting after Plowing

New York City has studied two separate versions of this method and then compared them both with the present practice of hauling away by contract an average 1,000,000 cubic yards of snow annually.

Version A contemplated the installation of pipe coils for the full width of the sidewalk and for a width of six feet in the gutter. It would require a complete reconstruction, for the widths involved, of the existing pavements. The required heat would have had to be supplied from adjoining buildings through appropriate agreements with the individual property owners. Careful estimates placed the initial outlay at $31,000,000, and the annual cost for fuel, operation, maintenance and including amortization, at about $3,000,000. The latter cost compares with the current estimated hauling cost of about $1,500,000. These prohibitive costs and the difficulties of negotiating the many individual agreements negates this system. The alternate solution of piping heat from a central generating plant is even less attractive.

Version B envisages the use of an electric fine-wire grid system which need be imbedded only one inch from the surface. This would obviate a complete reconstruction of the pavements involved. Similarly, the procurement of heat through the use of electrical energy is more attractive since it involves but one agreement with a power utility. The grid system in question could be constructed of many separate mats or mantles, about one to two square feet in area each, woven of fine copper wire to a ½ x 1-inch mesh. Individual mats would reduce the risk of outages due to breakage and would facilitate readier access to understreet facilities without ruining the entire grid system. The open-mesh construction would prevent horizontal cleavages in the pavement construction. The power costs are estimated at about 1 cent per square foot for a 12-inch-thick blanket of snow or about 30 to 50 cents per cubic yard for windrowed snow. Based on rough designs, the initial cost outlay, as compared with Version A above, would be about $10,000,000. The operating cost, primarily for the electrical energy, is estimated at about $750,000. This favorable cost picture and the other inherent advantages is stimulating further research and development. This is being directed primarily at developing suitable tough insulation. bonding with asphalt and concrete while still resisting abrasion and hot asphalt temperatures. We hope soon to install experimental strips in a pedestrian crosswalk, a raised overpass, and in the gutter for observation and tests next winter.

Direct Flame

In this method burners apply the melting heat directly to the snow, before or after plowing. Although the large single-burner version is reported to have been successful in railroad and similar work, its application in city streets would not be tolerated because of the attendant noize, hazards, soot, etc. The multi-jet hooded burners, similar to those used in asphalt paving and repairing, have demonstrated themselves to be inefficient, hazardous, noisy and the source of excessive air pollution.

Melting in Pits

This method utilizes an immersion-type burner which melts snow as it is dumped into a pit or catch basin. The unit, including the blower and accessories, can be mounted either permanently within the pit or on a mobile trailer. The pit must provide a water reservoir of three-foot minimum depth. The fuel, mixed with the air of combustion, is burned in a submerged position so that all of the products of combustion are discharged about 18 inches below the surface of the water (melted snow). The excess water passes over a suitable weir into the nearest sewer. The inherent high thermal efficiencies (about

95%) and the turbulence produced by the submerged exhaust results in a high-capacity melting process. Units have been designed to develop melting rates of 25 and 50 tons per hour.

Because of its simplicity and general effectiveness, this system seems to have merit for handling snow in limited locations such as parking fields and market areas. Its application for street purposes, however, poses the problem of either enlarging and reconstructing the existing catch basins or building new ones. This time-consuming, expensive construction with the problems of noise, and probable clogging of sewers seems to negate its use for extensive municipal application.

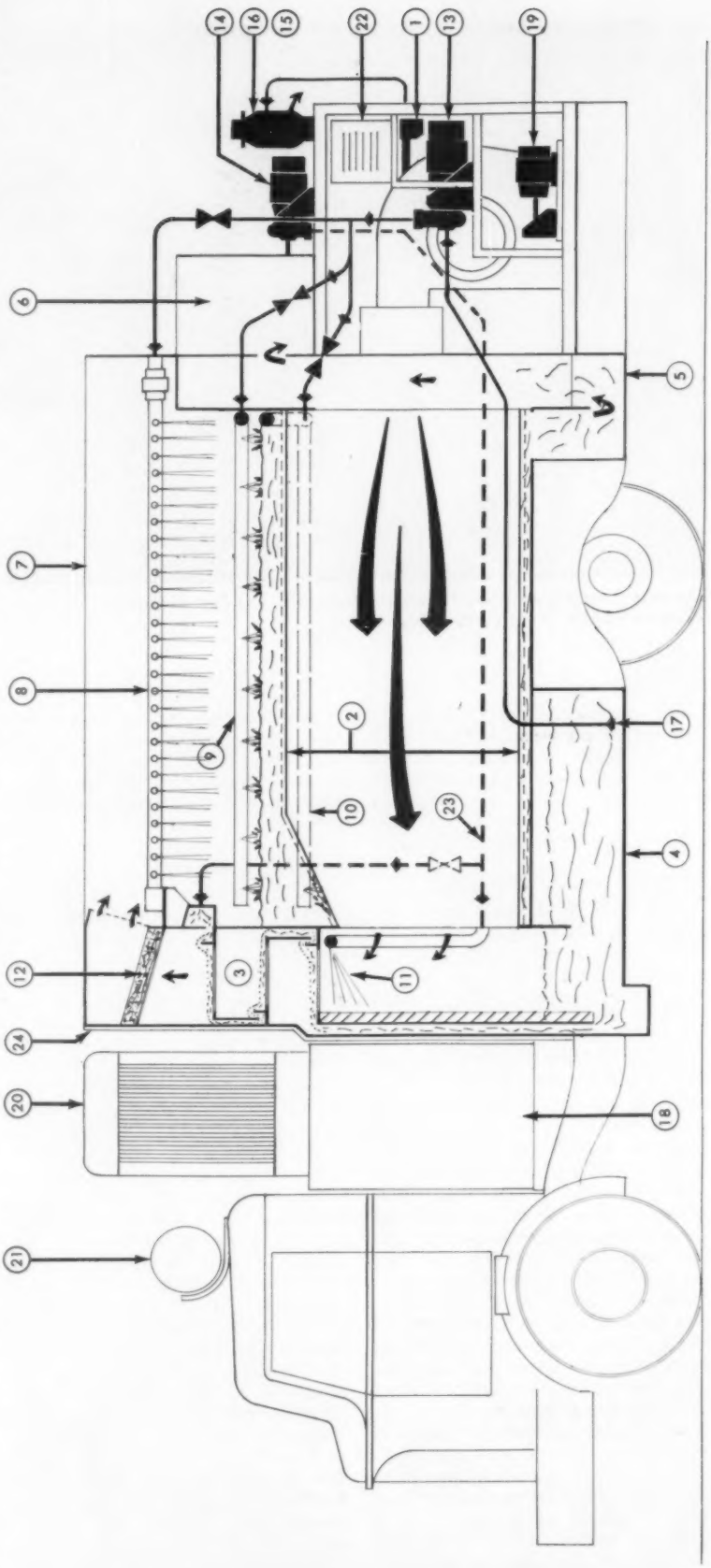
Mobile Melters

In this method a mobile machine melts the snow continuously as it is loaded into the hopper. Many variations of the mobile snow melter exist in design form. A few have been patented and some have even been built. To date none has proven practical or economical.

Nevertheless, spurred by directives from former Commissioner Screvane and present Commissioner Lucia, we reviewed the available past designs and patents, examined their weakness and good points and then began to develop some new concepts and designs.

The key to our successful solution lies primarily in the changed concept of heat application. In the past multi-jet oil burners supplied the melting heat with the flame applied either directly to the snow within the hopper or indirectly through the metal housing. Our melting medium is hot water and the heat is applied successively by radiation, by spray injection and by agitated inundation. This and several other improvements produce an efficiency of about 95% as against the 30% to 40% obtained in past designs.

Working jointly with the Peabody Engineering Corporation (a recognized authority in the "burner" and "scrubber" field) we completed the design and built a full-sized experimental unit. Several tests made with crushed ice to which various types and amounts of debris were added—all to simulate "old" snow—demonstrated a successful, practical melting operation. From the performance data secured we anticipate a con-



The schematic drawing shows details of the new snow melter; the text identifies each.

tinuous, realizable melting rate of 75 to 100 tons (680 to 900 cubic yards) per hour at an approximate cost of 25 cents a cubic yard. This includes amortization, fuel, estimated maintenance and repairs, operating labor (five-man crew) and attendant sewerage cost. The latter is negligible, although it has been taken into account in the interest of completeness. This total cost is about 25% of our present hauling and disposal costs. Next winter's proposed full-scale field use will, of course, be the "acid" test from which further improvements and simplification of design can be derived.

Experimental Snow Melter

The functioning of the unit can be best followed with the aid of the flow diagram shown on p. 99. As the machine travels parallel to the curb a blower-type loader places the snow continuously at ten to 15 cubic yards a minute onto the heated bar rack at the top of the melting hopper. This rack screens out objects larger than nine inches and partially melts the snow by radiant heat from the hot water circulating in the pipes. As the snow falls through, three successive layers of jets and sprays inject added heat. Finally the remaining snow drops into a turbulent melting tank surrounding the circular furnace or air heater. The melted snow (about 300 to 400 gpm) is discharged, either by gravity or by an overboard pump as required, through trailing hoses into the nearest sewer manhole or catch basin.

Water is drawn from the bottom of the melting tank and after passing through a debris separator is recirculated by the cold-water pump through a heat exchanger to raise the temperature of the water to about 160°F. The heated water flows into a hot-water tank and then forced by a hot-water pump successively through the heated bar rack, then the melting spray system and finally the melting tank. For safety and economy, sensing devices control this continuous cycle to shut off or modulate the heat from the burner automatically.

A blower (not shown) takes the combustion air from the outside and forces it into the furnace where a kerosene burner heats it to about 3000°F. Sprays desuperheat the hot air which then bubbles through multiple pans in the heat exchanger and is finally discharged at the top front end of the unit in a scrubbed condition at about 60°F. A diesel electric generator set produces electrical power for all the auxiliaries. The debris separator screens out extraneous material down to ⅛-inch size before recirculating it into the spray system to alleviate clogging and stoppages.

Design

The design of the snow melter can be best followed by referring to the appropriate numbers in the accompanying schematic drawing on the opposite page.

1. Kerosene 3-gpm burner assembly, including forced draft fan with motor, complete with auxiliaries and safety devices.

2. Circular stainless steel furnace (4½ feet in diameter and 10 feet long) designed to heat gases to 3000°F and to produce a heat release of 24,000,000 BTU per hour.

3. Multi-stage direct-contact type heat exchanger to heat 450 gpm of melting water from 50° to 160°F. Exhaust gases are scrubbed free of air pollutants and discharged at about 60°F. The hot-cold junction portion of the scrubber tower is lined with refractories.

4. Hot-water suction-surge tank, 500 gallons, continuously fed by gravity from the overhead scrubber.

5. Specially designed drainage sump and effluent structure.

6. Debris separator comprised of a partially submerged, inclined flight-type conveyor travelling over a perforated bottom plate. The debris trapped on the stainless steel screen is pushed upwards by the flights over a discharge weir and into a rubbish hopper.

7. An 8x8x10-foot snow hopper, enclosing the circular furnace, of welded construction and integrally mounted and connected to the adjoining auxiliaries. The hopper is equipped with rapid-filling and discharge valves.

8. Heated bar rack of all-welded construction with swiveled three-inch center manifold and ¾-inch branch piping spaced 16 inches o.c.

9. Perforated spray headers equipped with spray nozzles for injecting hot water into the snow.

10. Agitating top and bottom header manifold with discharge nozzles for agitating the water in the melting tank.

11. Humidification sprays for desuperheating the high temperature gases.

12. Entrainment separator for discharged air.

13. Hot-water circulating pump, centrifugal type, capable of 450 gpm at 1,750 rpm and 50-foot total head.

14. Cold-water recirculating pump. Specifications same as for 13.

15. Overboard discharge pump, centrifugal type, 250 gpm at 1,750 rpm and 40-foot total head.

16. Water meter, turbine type, size 3 inch, installed on this experimental model only, to measure melting rates and to produce other control data.

17. Hot-water pump suction intake.

18. Kerosene fuel tank of all-welded construction and 500-gallon capacity.

19. Kerosene pump of the rotary gear type, 3 gpm at 300 psig.

20. Diesel electric generator of 60-kw capacity complete with starting batteries.

21. Diesel fuel tank (No. 2 oil) of 40-gallon capacity.

22. Diesel generator control cabinet mounted on left rear of the melter unit.

23. Cold-water line connection from pump to heat exchanger.

24. Insulating blanket of 1-inch thickness.

25. Central control panel (not shown) mounted on right rear of melting unit, for starting and automatic controls of burner and pumps, and for housing interlocking and safety relays, switches, indicators, gauges and audible alarm.

Mounting

Because of the experimental nature of this design, and in order to expedite its manufacture, the present unit is mounted on an old 36,000-GVW truck chassis. The unit is equipped with a large amount of valving and piping, controls, gauges and meters to provide engineering and performance data. Subsequent designs would, of course, be mounted on low-bed trailers and would dispense with most accessories.

The development and success of this experimental unit was made possible by the splendid cooperation of the Peabody Engineering Corp., the invaluable assistance of Messrs. Donnelly and Rothman and the sustained encouragement of Commissioner Lucia, in the Department of Sanitation.

To complete the picture it should be noted that another type of mobile snow melter is now under development and construction. It is based on installing one or more immersion-type burners, as described under Method 4, within a melting tank. This, in turn, with blowers, motor generators, and various auxiliaries, is to be mounted on a trailer chassis. On completion it is to be tested to progressively "debug" any shortcomings and to obtain factual field performance data. ◄◄

In 1907, this ugly, wasteful lakefront . . .

. . . became this under Burnham's historic plan.

Chicago Expands Its Burnham Plan

The nation's most dynamic city plan of the first half of the century takes on new goals for the second half

By **IRA J. BACH,** Commissioner of City Planning

Many students of urban affairs look to Chicago's Burnham Plan as the beginning of modern city planning in the United States. This 1907 blueprint for city development brought imagination and order out of Chicago's 70 years of haphazard growth. The Chicago of 1907 was the unruly offspring of railroad boom, industrial sprawl, and the disastrous fire of 1871. Nevertheless, it adopted the plan with vigor and determination.

The Burnham Plan, popularly named in recognition of its author-architect, Daniel H. Burnham, and officially called the Plan of Chicago, stimulated the "city beautiful" movement which spread throughout the nation in the early years of the century. The Chicago Plan Commission was established in 1909 to study and promote accomplishment of the plan's proposals.

Mr. Burnham, assisted by architect Edward H. Bennett, proposed beaches on Lake Michigan, forest preserves around the city limits, a metropolitan-area highway system, consolidated rail facilities and a civic center. Chicago responded to this plan aggressively, slowed only by the depression and the two world wars.

These experiences of war and depression confronted the city with new requirements and new problems. Today Chicago is carrying out plans far beyond those envisioned by Mr. Burnham. One contrast is the expanded role local government now plays in the development of the city.

Reorganization

In 1957, Mayor Richard J. Daley formed the Chicago Department of City Planning and definitely established it as a local-government responsibility. The Chicago Plan Commission was reorganized as a strengthened policy-making body.

The new department, with the support of the commission, began anew to plan for the total urban environment. Its concerns included housing, urban renewal, neighborhood conservation, capital improvements, and zoning. The comprehensive general plan, scheduled for completion in 1963, will outline the future development of land use, traffic circulation patterns and community facilities in every Chicago neighborhood, projected over 20- and 50-year periods.

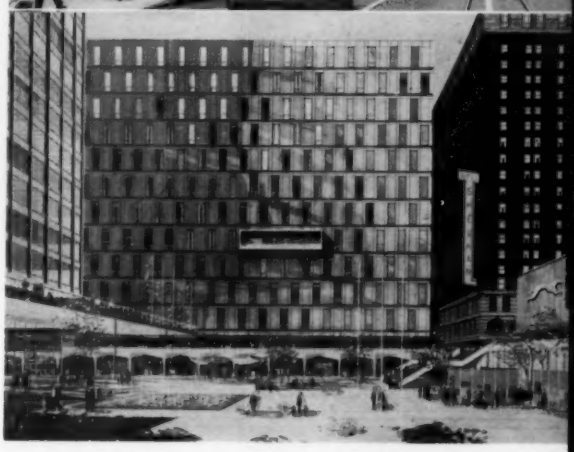
The initial step in the revised General Plan, announced in 1958, involved the central area of Chicago, and presented a 22-year program for Chicago's Loop and its immediate environs. The 13-square-mile area comprises the physical and commercial center of the city. Some sections have become congested and deteriorated.

Renewal of older section, adequate circulation facilities, and orderly land use are basic principles of the plan. The specific proposals are:

- **50,000 new central-area dwelling units for all income levels.**
- **Improved access to the central area by means of preferential streets and ring roads to supplement the expressway system.**
- **A civic center (city-county) and a federal center.**
- **Consolidated rail-passenger terminal located within a transportation center.**
- **Central-area location for the new Chicago branch of the University of Illinois.**
- **Open space.**
- **Expanded recreational areas along Lake Michigan.**
- **Development of the river front.**

And today, this vigorous, but unattractive "loop" street . . .

. . . is slated to evolve into this open and gracious pedestrian plaza.



- **Increased private industrial and commercial investment.**
- **Separation of vehicular and pedestrian traffic.**

The estimated cost for implementing the central area is $1,500,000, of which 80% would come from private investment.

Like the central area plan, the general plan will present a program to make Chicago a more functional, healthful and beautiful city for all its people. In order to reach this goal, the department is conducting studies of city trends in population, industry, housing and employment. Policy statements, based on these findings, and projections will be the foundation for the general plan.

At the same time, the department has undertaken a three-year community-renewal-program study to supplement the general plan. Although these two projects will be closely related, there is a basic difference between them.

The plan will state the city's objectives for development, while some of the methods for meeting these objectives will be outlined in the renewal program. The study has been made possible by a $1,000,000 grant from the federal government.

Similarities with Burnham

Although today's modern proposals obviously vary from Burnham's of 50 years ago, many of the underlying principles are the same. For example, like the 1909 plan of Chicago, the central-area plan recommended expanded use of the lake front for recreational purposes. It specifically calls for several islands on filled land off the lake shore, for beaches and mooring small craft.

The Burnham Plan visualized port facilities at the mouths of the Calumet and Chicago Rivers. Today, large-scale improvements at Navy Pier and the creation of an inland Lake Calumet Harbor are meeting Chicago's growing port demands stimulated by the opening of the St. Lawrence Seaway.

Transportation

Transportation, an important concern of the Burnham Plan, is even more prominent in our planning today. The earlier plan called for a consolidated railroad depot. The central area plan proposes a transportation center west of downtown to coordinate all modes of travel. In addition to consolidated rail facilities the center would include an air terminal, heliport, bus depot and connections with rapid transit.

For jet air transportation, the city is building the world's largest commercial airport, Chicago-O'Hare International, covering more than ten square miles. A $120,000,000 revenue bond issue, retired by rents from airlines, is financing most of the airport development.

A network of expressways connects the central area with outlying communities. When the total program is completed in 1965, these roads will link all parts of the metropolitan area and connect with the state toll-road system. Median-strip rapid transit is being provided on the Congress, Northwest, and South Expressways. Supplementing expressways with high-speed mass transportation is a means by which Chicago is fighting traffic congestion.

Many recent developments have brought the Central Area Plan's proposals closer to reality. Since August 1958, Chicago has witnessed the following:

- **13,500 new central-area dwelling units under construction, planned or proposed.**
- **Selection of architects and federal approval of an application for a planning advance for the civic center.**
- **Demolition for the federal center.**
- **Selection of the central-area site of the Chicago branch of the University of Illinois.**
- **Completion of two expressways and demolition for the third.**
- **New office buildings throughout the central commercial district, especially along the Chicago River.**
- **A vast capital-improvements program throughout the city, providing the city with a stable neighborhood framework around the city's core.**

The department is especially encouraged by increased public interest in city planning—and by the visible signs that Chicago has entered its greatest era of progress through planning. ◄◄

A bird's-eye view of the plant from the top of one digester.

Separate Sewers Aid Plant Operation

. . . and reduce street and basement flooding

By **W. V. LACINA***
Superintendent
Mankato, Minn.

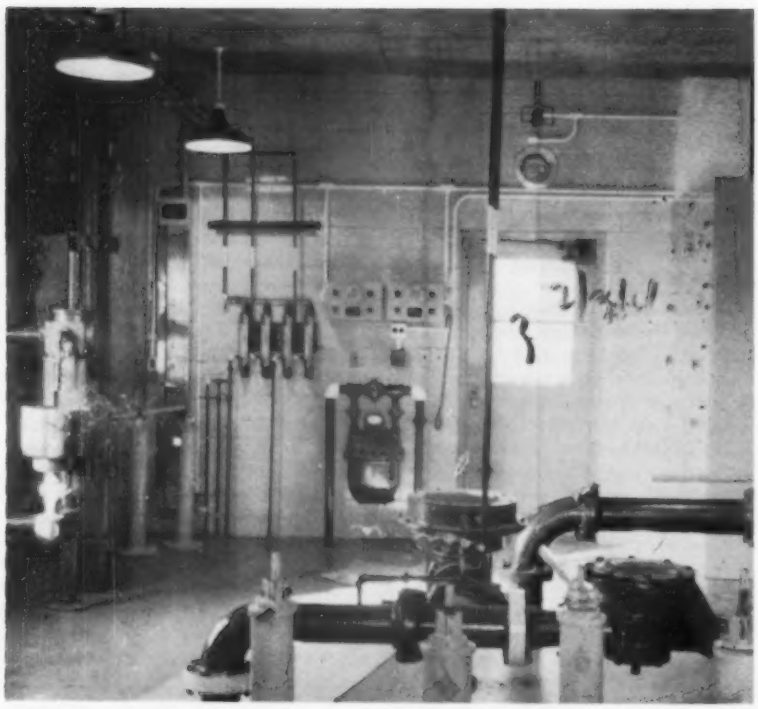
The revamping of several miles of combination sewers over a seven-year period paved the way for officials in Mankato, Minn., to build a new sewage-purification plant which treats wet-weather sanitary flows without difficulty.

When Mankatoans laid their first sewers, before 1900, they installed a combination system. As the network expanded and new roofs and streets contributed additional runoff, the designers gradually shifted to separate systems for storm and sanitary flows. The original lines, however, continued in service on a combination basis.

The original portion of the city lying along the bank of the Minnesota River became the primary business and industrial section. Here, the sewers remained combined and were occasionally responsible for flooded basements when severe storms struck.

When land was no longer available adjacent to the river banks, the population expanded to the flat hilltops north, east and south of the central business district. As these sections grew, the runoff increased in quantity and intensity, cascading down the 200-foot hills which drain to the river through the center of the city. Although most of the new sewers were of the separate variety, some radiated from the old system, contributing more storm water to these already overloaded arteries.

Exceptionally high river levels in the spring of 1951 and 1952 would have entered the combination-sewer river outlets and filled many commercial basements were it not for a bulwark in the form of an old pumping station with new Fairbanks-Morse pumps. These prevented flooding from normal sewage flows while gates barred the river water from entering the system.



The sludge-control building features color codes on all pipes.

Bond Issues

In 1953, the council submitted two bond issues to the voters which totalled approximately $2,000,000. The smaller issue, one-third of the amount, provided for the separation of most combined sewers as well as drainage relief for some areas which contained no storm sewers. The bal-

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* Mr. Lacina is the superintendent of the Division of Water and Sewers. He was previously supervisor in the Water and Sanitation Department, St. Cloud, Minn.

ance scheduled the construction of 1.5 miles of interceptors and a primary treatment plant. These plans proposed interceptor construction along the Minnesota River bank to collect sewage from all outlets then discharging raw sewage into the stream. This proposal also included one new lift station with a capacity of 4,500 gpm.

Both issues passed with flying colors. Construction began in 1954 and half of the storm sewers were completed during the working season. The following year found the remaining portion substantially in place. Construction of the interceptor system progressed more slowly with only the $100,000 lift station and the smaller interceptors under contract by 1955.

The New Sewers

In nearly every case the old combination sewers became sanitary sewers with the removal of catch basin leads. New storm sewers constructed with the bond money replaced the generally inadequate capacity of the old double-duty sewers. Using the rational formula, the city engineering department designed the new storm sewers to withstand the intensity of a ten-year-frequency storm.

A new 42-inch reinforced-concrete sewer constructed in Bruels Street relieved the old 12-inch artery of its storm burden. A badly overloaded stone drainage tunnel on Vine Street had transported increasing volumes of storm water from a hillside ravine to the river for many years. The bond money constructed a parallel 48-inch to 66-inch diameter reinforced concrete sewer with junction boxes every 500 feet to relieve the flooded street condition formerly encountered several times each year.

After the contractors completed the major portion of the program in 1955, personnel from the Division of Water and Sewer corrected other cases where storm water reached the sanitary sewers. Today, we believe we have eliminated all but a few minor infractions. Drain tile surrounding many basement foundations and connected to the house service still contribute ground water to the sanitary sewers but this condition is relatively minor compared to the number of inlets that collected water from the streets and shunted it to the combination sewers as recently as seven years ago.

The upgrading of the sewer system also allowed the paving and repaving of several miles of streets. Without drainage or with defective drainage, many of these streets had deteriorated to an alarming degree.

Meanwhile, other changes occured. Mankato State College supplemented its downtown campus with a substantial addition on the hilltop, necessitating the construction of new sewers and the rebuilding of an old interceptor several miles long to serve this rapidly-expanding district. This interceptor traversed the full length of the original settlement and accumulated sewage from other lines which formerly contributed to overloading. This, and other factors, necessitated the redesign of a portion of the new interceptor system and delayed the project.

It was not until 1960 that the council let a contract for the final 4,500 feet of 42-inch interceptor to join the otherwise complete system to the purification plant. The contractor encountered difficult construction conditions which included peat and solid rock while building this line.

A catwalk provides visual access to the wet well below.

Our primary purification plant is capable of serving a future equivalent population of 65,100. This volume is approximately double the present requirements. North Mankato, a separate community of 6,000, which lies just across the river, will soon decide whether or not it wishes

Near the plant, the interceptor sewer lies in peat.

This interceptor lift station is on the bank of the Minnesota River.

The laboratory is large, light and convenient.

us to treat their sewage on a volume and strength cost basis.

The sewage passes through a Rex mechanically cleaned bar screen, a Gruendler screening grinder and two aerated grit chambers before reaching the wet well which lies 40 feet below ground elevation and 17 feet below the normal river surface. A Shepard Niles crane with clam-shell bucket selects the solids from the lower level and delivers them to a truck for removal.

Although a bypass is available, we anticipate using it only on rare occasions. Even heavy rains have a relatively small effect on total flow.

Four Fairbanks-Morse pumps raise the sewage to two settling tanks, each of which is 100 feet long, 40 feet wide and 12 feet deep. They provide two hours detention at a rate of 5,820 gpm. The Dorr-Oliver mechanical sludge collectors contain a total weir length of 410 feet.

The settling-tank effluent flows by gravity to a chlorine contact basin which provides a detention time of 15 minutes. An Everson 250-to-1,500-pound-per-day chlorinator distributes chlorine to this tank prior to the discharge of the effluent to the river.

Digesters

Two digesters with P.F.T. floating covers contain a maximum total of 70,600 cubic feet. A third, fixed-cover, digester stores an additional 35,300 cubic feet. All employ gas-recirculating systems and heat exchangers, also P.F.T. units. One 150-gpm Fairbanks-Morse and two 122-gpm Duplex pumps transfer and pump sludge for removal.

We anticipate that the cold Minnesota winter will prohibit year-round use of the 18,000 square feet of sludge beds. During the winter we will pump the sludge to an emergency sludge lagoon with a capacity of 60,500 cubic feet or haul it to a proposed sanitary land fill.

The laboratory, which occupies 452 square feet of the Administration Building, is a gem. It includes an incubator, many cabinets, adequate work counters, a refrigerator and all necessary lab equipment. We perform the following tests on a regular schedule: BOD, DO, pH, settleable solids, suspended solids and chlorine content.

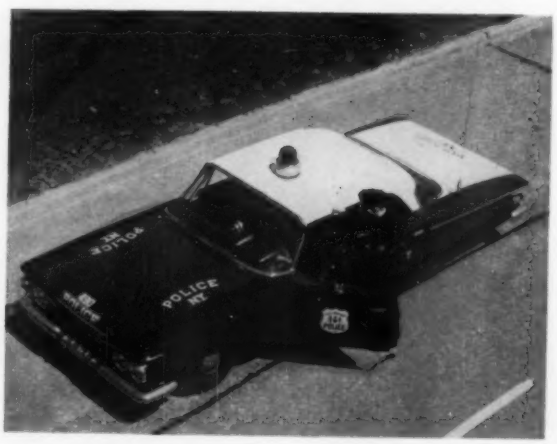
Totlz, King, Duvall and Anderson, St. Paul consulting engineers, designed the plant and interceptor sewers. Employees of the City Engineering Department and the Division of Water and Sewers did the staking and inspection. ◄◄

New York City's Police Cars Get New Insignia

New York City's police radio patrol has a fresh appearance this year as the fleet of new police cars goes into service. Each car bears a simplified version of the police shield on each of the two front doors. The shield, 10 by 12 inches, is reflectorized for easier identification and for additional effectiveness on night patrols and the establishment of road blocks.

The precinct and car number is affixed to the rear doors and the car number is also placed on the hood and in the car's rear license plate holder. All are reflectorized. The use of the car number eliminates the need for license plates under the law which exempts police vehicles from individual state registration.

The police department is getting 447 new Plymouth sedans. Of these, 372 are six-cylinder models; the remaining 75 are eight-cylinder patrol cars to be used for highway traffic enforcement. They represent the remainder of 672 new cars provided for in the 1960-61 budget, of which 225 were delivered in the latter part of 1960. The New York City Police Department's fleet is composed of 1,242 cars. ◄◄

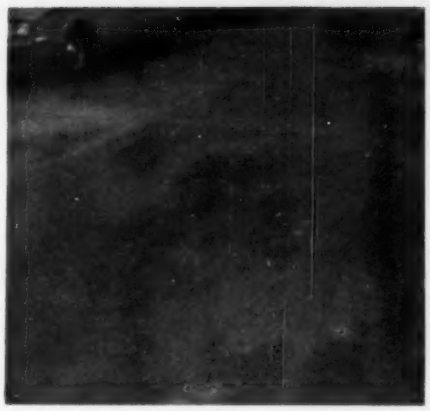


Police vehicles in New York City take on a fresh appearance this year.

This close-up shows the texture of the slurry seal.

Premature sweeping of the slurry seal caused this mottled appearance.

The seal covers the unsightly spalled areas.



Experiments on eroded surfaces indicate that . . .

Thin Coatings Stop Concrete Spalling

By **WILLIAM McELWEE**
Director of Public Service
Sioux City, Iowa

An experimental slurry seal applied to spalled concrete pavements in a residential area of Sioux City, Iowa, appears to be preventing further decay. The slurry seal is now one year old and functions admirably as a crack filler and protective coating. No wear is evident.

Soon after application and before proper curing, we sent sweepers and flushers to pick up the material which did not embed itself in the roughened, scaled areas or the joints and cracks. About 50% of the seal remained on the street. It covered those areas which required protection.

The total cost of the slurry seal including hand mixing, hand application with squeegies and the re-

Table I
SLURRY-SEAL COST BREAKDOWN:
Bushnell Avenue

Labor		Cost
2 truck drivers—32 hours total @ $2		$ 64.00
6 maintenance men—96 hours total @ $2		192.00
1 plant operator—16 hours @ $2		32.00
2 laborers—32 hours total @ $1.75		56.00
1 flusher operator—9 hours @ $2		18.00
1 sweeper operator—4 hours @ $2		8.00
	Total	370.00
Materials		
360 gallons of SS-1 @ $0.10		36.00
10 tons of sand @ $1.78		17.80
	Total	53.80
Equipment		
Trucks—32 hours @ $1		32.00
Flusher—9 hours @ $3		27.00
Sweeper—4 hours @ $6		24.00
	Total	83.00
	Grand Total	$506.80

Joints in the concrete emerge through the thin coat of plant mix.

Table II
THIN-HOT-MIX COST BREAKDOWN
West 14th Street

		Cost
Labor		
1 truck driver—44 hours @ $2		$ 88.00
1 maintenance man—44 hours @ $2		88.00
1 maintenance man—16 hours @ $2		32.00
1 roller operator—44 hours @ $2		88.00
1 laborer—44 hours @ $1.75		77.00
1 foreman—28 hours @ $2.50		70.00
	Total	443.00
Materials		
58 tons of asphalt @ $6		348.00
200 gallons of emulsion @ $0.105		21.00
	Total	369.00
Equipment		
1 truck—44 hours @ $1		44.00
1 roller—44 hours @ $1		44.00
1 spray wagon—44 hours @ $1		44.00
	Total	132.00
	Grand Total	$944.00

moval of a portion of the material to expose the sound areas of the concrete, was $506.80. Each batch consisted of 15 gallons of SS-1, five gallons of water and 853 pounds of river sand. We applied 24 batches on 2,375 square yards at an average cost of 21.3 cents per square yard. Table I indicates the units of cost for the Bushnell Avenue project.

This year we tackled a 700-foot long section of West 14th Street using a different method, a hot-plant mix. This is similar to the "Carpet Coat" applied by St. Paul officials except that they applied theirs with a paver. We did not.

The final thickness of this application approximated the ⅜-inch maximum size of the aggregate chips. The average weight in place of this thin plant mix was 55 pounds per square yard. Because the spalled sections of the original concrete had lost some material, they lay below grade and now have a thicker cover of the plant mix than the sections which had not eroded.

Differing from the slurry seal where no tack coat covered the concrete prior to application, 14th Street received a light shot with a pressure distributor to develop a bond. We cut the emulsion with water to reduce the asphalt content.

Although the cost of the thin layer plant mix is double that of the slurry seal, we have more than five times the amount of material on the street which should result in substantially longer life. The average cost of covering 2,115 square yards with the plant mix was 44.6 cents per square yard. Table II indicates the unit costs for the West 14th Street project.

It is interesting to note that materials totalled only 11% of the entire cost of the slurry seal but made up 39% of the plant-mix costs. This accounts for the much thicker plant mix at a unit cost little more than double that of the slurry seal. Continuing observation will indicate which of these economical methods is better for sealing spalled concrete that is still structurally sound. ◄◄

Metro Dade County Saves on Legal Costs

Florida's Metropolitan Dade County saved nearly a quarter million in legal costs over the past three years, according to Metro County Attorney Darrey A. Davis.

Under the old Dade County law system, Mr. Davis reports, total legal expenses would have been $631,801. Under Metro, the actual cost was $393,692.

Prior to establishment of the law department under Metro, the cost of regular legal services to the county amounted to $168,834 annually. The county's legal services were provided by private attorneys hired by individual departments and boards.

But the cost for the county law department for the first three Metro years was $393,692, or an average of $131,231 per year. This alone is an annual saving of $37,603, or $112,809 for the three years.

The full-time department, now providing centralized service and consolidation of Metro's law business by the elimination of all part-time and special counsel, brought about the savings.

Another saving of $34,700 per year resulted with the elimination of special counsel services for county officials, boards and agencies.

A big $355,901 economic cutback was brought about by self servicing of 19 condemnation suits and 23 appeals for 12.7 million dollars worth of right-of-way for roads. Applying the identical fee utilized as the basis for payment of legal services for condemnation suits prior to Metro, the cost would have been $355,901. This amount was slashed to zero with creation of Metro's own law department.

While the cost of legal services has been substantially reduced, the volume and variety of services have increased greatly. Litigation is up 452% while legal services of a non-litigation nature (resolutions, ordinances, opinions, legal documents, conferences and other business) have increased an estimated 750%. The exact figure is difficult to determine since before Metro, centralized records were not maintained and many departments did not keep uniform records on legal matters. ◄◄

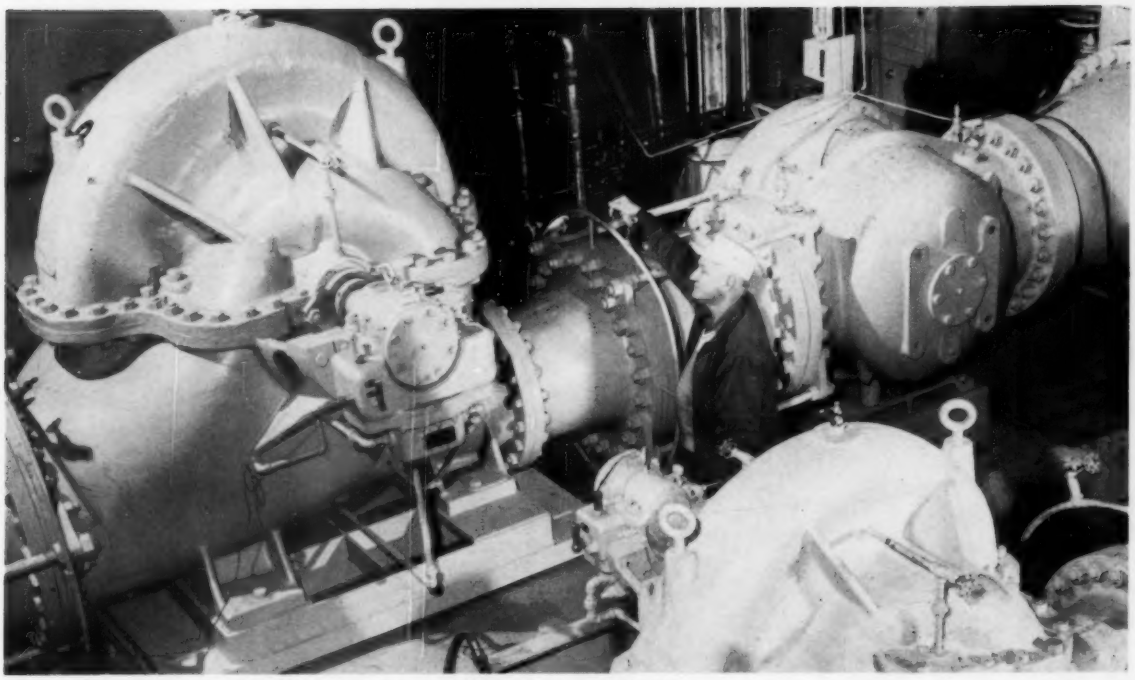


Figure 1. The double-suction, horizontal pump with side suction and side discharge is the workhorse of the water-works industry.

How to Select and Install Water-Works Pumps

Part I—The basic types, design data and special features

By IGOR J. KARASSIK and CHARLES J. TULLO*

Water-works programs require a great deal of study, for they must take into account both immediate demand and expected growth of the community. This has a direct bearing on the type and size of equipment to be used. In the case of pumps, geographical conditions also apply for, as elevation varies from station to station, so does the working pressure.

The care given to the selection and installation of pumping equipment will be reflected in its overall economy and performance. While installations vary considerably, certain basic considerations apply in most cases.

Let us first consider centrifugal pumps. Water-works designers have used them almost exclusively for many years to meet the broad service demands these installations require.

Many types of centrifugal pumps are available to cover this very broad field. However, a careful analysis shows that the majority of the water-works installations require application of one of the following:

1. Horizontal-shaft, double-suction pumps with horizontally split casings. (Figure 1)

2. Vertical-shaft, single-suction, solid-casing-type pumps, more readily adapted to vertical dry-pit installations. (Figures 2 and 3)

3. Vertical wet-pit pumps. These are of the turbine-well type and are more readily multi-staged if necessary. As their name implies, these pumps are of the diffuser type and applied for extending into a wet pit. (Figure 4)

Horizontal Double-Suction Pumps

The single-stage, double-suction, horizontally split-casing volute type centrifugal pump can serve a water works and many other general-purpose applications. Pre-engineered, it incorporates excellent hydraulic and mechanical features to fit most applications for which single-stage pumps are suitable. If required, it may be multi-staged with series piping. (Figure 5)

Practically all small and medium-sized water-works plants use this type of pump. When located above a water intake tunnel or intake piping, the pump usually requires priming on starting. Should local conditions permit, it can be made

* Mr. Karassik is a consulting engineer and manager of planning, and Mr. Tullo is a consulting engineer, for the Harrison Division of the Worthington Corporation.

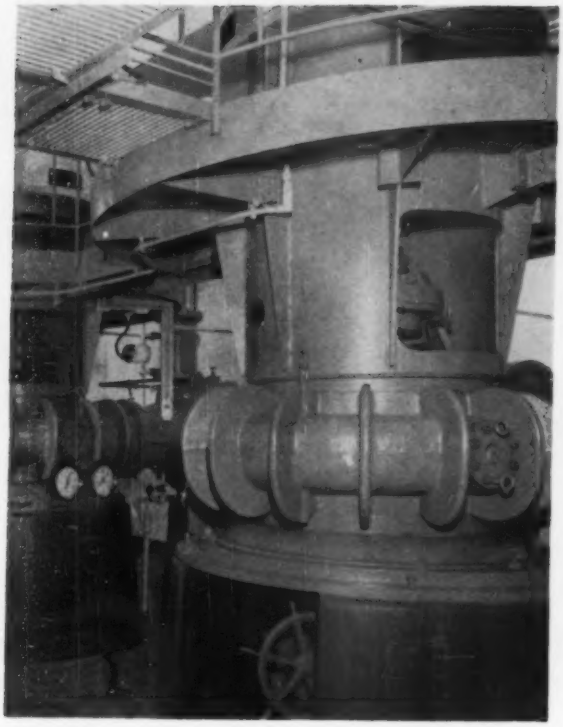


Figure 2

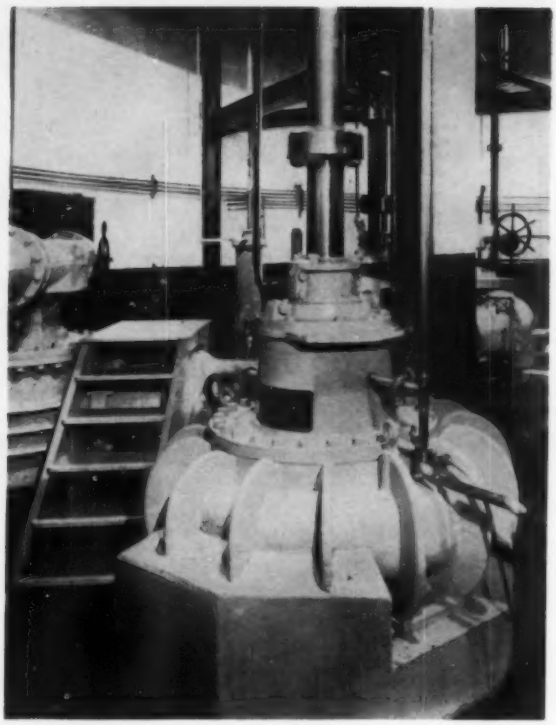


Figure 3

Vertical shaft pumps may be closely coupled (Fig. 2) or have extended shafting (Fig. 3) to permit placing the motors at a higher elevation. These are dry-pit, single-suction units.

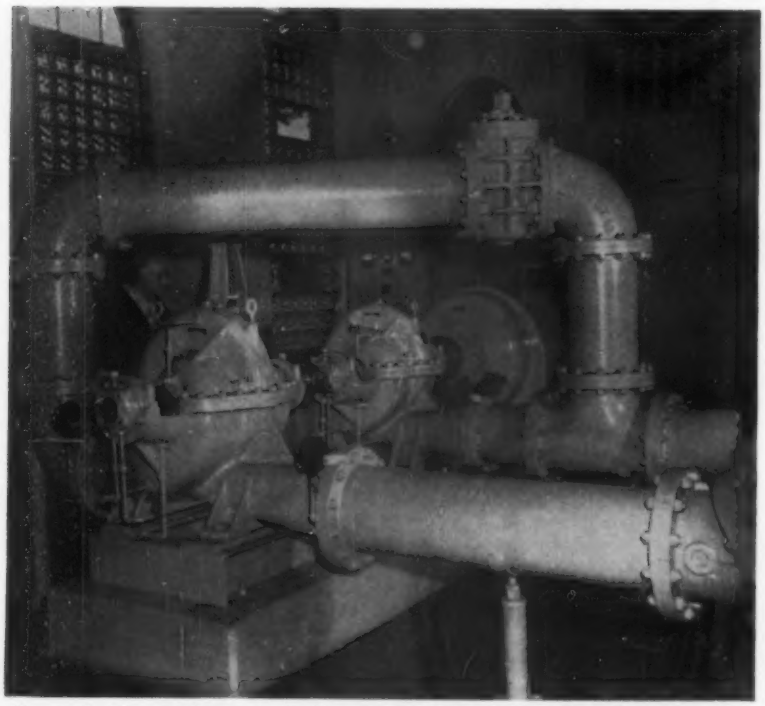


Figure 5. The single-stage, double-suction, horizontally split-casing pump may be multi-staged with series piping if necessary to meet high head conditions.

self-priming by installing the pump in a dry pit, with the impeller centerline located at the lowest prevailing water level. This type of pump incorporates a simple but rugged design which allows ready access to the interior parts for examination and rapid dismantling if repairs are required. Lifting the upper-casing half permits the removal of the pump rotor without disturbing the suction and discharge piping.

Many of these pumps, designed to develop high heads per stage, incorporate a double-volute design to balance the hydraulic radial thrust. This permits continuous operation at any partial capacity without damage, particularly advantageous when required to operate over a broad range of the pump's characteristics, and especially for conditions to the extreme left of the rating curve. The majority of the sizes are available with both side and bottom suction openings.

Normally the casings are cast iron, with bronze impellers and rings. The impellers are of the enclosed-vane double-suction type which, along with the rings, are renewable to permit replacement and restoration

of running clearances if abnormal wear takes place during service.

The bearings are usually of the anti-friction type, either single-row deep-groove, or double-row type, grease or oil lubricated, depending on the shaft size and other considerations. In all cases, however, the loadings on the bearings are very conservative to insure maximum bearing life. If desired, sleeve-type, oil-lubricated bearings can generally be supplied. In some cases, this involves a small additional charge because anti-friction bearings are "standard" construction.

Vertical-Shaft Single-Suction Pumps

The vertical-shaft, end-suction pump has been most popular for larger capacities in dry-pit installation. This design combines the high efficiency and low maintenance of the horizontal double-suction pump with lower cost and slightly higher rotative speeds. Because of the suction and discharge nozzle arrangements, these pumps are ideally suited for vertical mounting in a dry pit, preferably at the lowest water level to make them self-priming on starting. They connect directly to solid-shaft induction or synchronous motors, either close-coupled or with intermediate shafting between the pump and the motor which is then mounted well above the pump pit floor.

As in the case of the horizontal double-suction pump, the vertical dry-pit single-suction pump is a compact and sturdy piece of equipment. External grease or oil lubricated bearings support the rotor, a design requiring the least attention since the operator can easily inspect the oil level by means of an oil sight glass mounted at the side of the bearing or oil reservoir. If grease lubrication is used, very extended periods of time take place between required relubrication.

Removable suction heads and stuffing-box heads further facilitate maintenance and replacements. The rotor is readily removed through the top of the casing, making it unnecessary to remove the pump from its mounting or break suction and discharge connections for periodic inspections or repairs.

The design employs a cantilever-type shaft construction, with the impeller mounted at one end of the pump shaft while the bearings are mounted at the opposite end, externally to the wetted surfaces of the pump proper. A shaft designed to achieve minimum deflection during operation assures the longest possible life for the pump parts, even for those considered to be expendable, such as wearing rings, shaft sleeves and packing.

Vertical Wet-Pit Pumps

The wet-pit pump is ideal for vertical installations when the available NPSH (net positive suction head) is low and floor space is limited, and when priming or stuffing-box operation with horizontal pumps presents a serious or hopeless problem. Many small communities have used vertical-turbine well-type pumps for their water-supply facilities and recent statistics indicate an increase in the use of the wet-pit pump by water-works engineers. An excellent feature of this pump is the ease with which it may be multi-staged in order to meet higher pressure demands, so often required in water-works facilities.

Essentially, the vertical turbine pump consists of three major components: the bowl assembly, the column-pipe assembly and the driving head. The bowl assembly consists of a suction head, the impeller or impellers, the discharge bowl, the intermediate bowl or bowls (if more than one stage is used), the discharge case, the shaft and the bearings. The column-pipe assembly consists of the column pipe itself, the shafting above the bowl assembly, the shaft bearings and the cover pipe or the bearing retainers.

The pump is suspended from the driving head which consists of the discharge elbow, the motor or driver support and the stuffing-box assembly. The thrust bearing mounted in the driver itself, or in the driver head for gear-driven pumps, supports the weight of the pump rotor and the downward hydraulic thrust. Hollow shaft motors or motors with right-angle gears generally provide the driving force.

A standard-fitted pump, which consists of bronze impellers, bronze wearing rings, stainless-steel shafts, cast-iron diffusers (or pump bowls), cast-iron suction heads, leaded bronze shaft bearings, carbon-steel line shafting and column piping will meet most water-works service needs. However, these pumps are also available in standard all-iron and all-bronze construction. The discharge elbow may be of cast iron or fabricated steel.

Part II of this series will discuss the relative merits of dry-pit and wet-pit installations and will outline some of the important considerations that must be taken into account when laying out a wet-pit installation. ◄◄

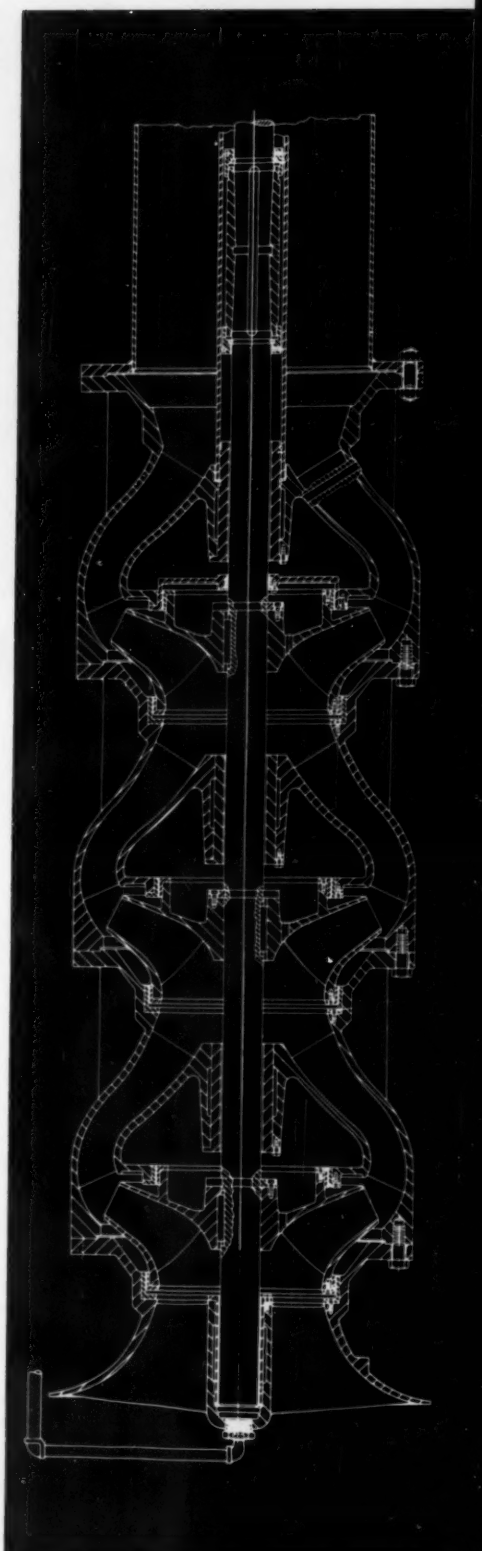


Figure 4. This cross-sectional view of a vertical wet pit or turbine well-type pump shows how readily they can be multi-staged if necessary. This is a three-stage unit.

The basement shelter in this building can resist a "Zero Zone" nuclear blast.

New City Hall Annex Is H-Bomb Proof

City Hall Annex, a major project of the one-year capital-improvement program of the City of Burbank, Calif., can be used as a bomb shelter if the emergency arises. The $920,000 building houses the police department and civil defense headquarters.

The basement shelter is said to be the first of its kind on the West Coast. It is designed to meet civil-defense criteria to withstand a zero-zone nuclear blast and to protect against initial and fall-out radiation. Walls of the shelter are 16 inches thick. Its roof is three feet thick. Blast doors capable of withstanding an over-pressure of 100 pounds per square inch protect the shelter's three entrances. A tunnel connects the annex and the County Court Building, across the street.

Other features of the civil-defense unit are a water well, 650 feet deep, a 75-hp emergency generator, emergency air-conditioning and filter systems, food storage and preparation facilities, dormitories, a radio-activity decontamination chamber, showers and infirmary, record and microfilm storage, a repair shop, and a communications post.

Communication facilities include a regular PBX and intercom system, supported by four direct telephone trunk lines. Radio communications include local police, local fire department and inter-city police frequencies, civil-defense emergency amateur nets and CONELRAD warning system. A telescoping antenna tower, for emergency use, is located underground 120 feet from the building. Using emergency power, it can be raised by remote control from within the shelter.

Police Quarters

The basement area also provides about 8,000 square feet for police facilities. These include line-up stage, locker room, squad room, kitchen, class room, auxiliary-police headquarters and miscellaneous service rooms.

The entire main and second floors of the two-story annex are used by the police department. On the main floor are the administrative offices, crime laboratory, communications center, traffic division, watch commander, and 64-prisoner jail. Chief Rex R. Andrews, his staff, detective bureau, investigative division, juvenile division, vice control, and polygraph department occupy the second floor.

The building's police communication system includes regular phone service, internal private phones, two-channel radios with automatic recording log, field monitors in all operating offices, multi-level paging on internal telephone, and special jail intercoms, the so-called "baby-sitter mikes."

It is possible to segregate prisoners by sex and class; 16 categories can be separated. A completely washable drunk-tank is constructed to prevent injury by falling to prisoners.

A one-story garage, workshop and communications-apparatus building adjoins the annex. Doors at each end of the apparatus room permit quick removal of vehicles. A metal-shielded screen room for repair of radio equipment permits isolation of radio transmitters being repaired, to prevent interference with regular transmissions.

Construction began January 11, 1960. A construction feature was the pouring of over 1,300 cubic yards of concrete in seven hours.

The annex was dedicated February 24, 1961. Participating were Burbank Mayor Newell J. Cooper, Los Angeles Chief of Police William J. Parker, Civil Defense Regional Director Evar Peterson, California Disaster Office Representative Allen K. Jonas, Burbank Postmaster Albert Ricketts, Chief Deputy State Attorney General Richard Rogan, Burbank Chamber of Commerce President Earle Blais, and Judge Archie Walters.

Other Burbank councilmen serving at the time, included Robert F. Brandon, vice-mayor; H. B. Bank; Earle W. Burke; and Dallas M. Williams. Harmond R. Bennett is city manager. Benjamin M. Watson is civil defense director. Communications engineer is Robert E. Brooking; associated architects were Prescott & Whalley, A. I. A., and Marion J. Varner & Associates. ◄◄

A story of progress—this area behind a high school changed from a burning dump to a sanitary landfill to a play area. Picture was taken early March 1961. At right, on March 28, 1961, Girl Scouts were planting grass seed on the completed fill.

An 18-month demonstration project of better, citywide sanitation in Rocky Mount, N. C., produces . . .

A Cleaner City Through Teamwork

By **ROGER O. OLMSTED***
Medical Entomologist
Public Health Service

During the past 18 months we have come to the realization that co-operation between various public agencies helps achieve goals that would be impossible for a single group to attain. During this period we watched a demonstration project lay the foundation for a comprehensive environmental sanitation program. This is now being used to foster other projects in North Carolina.

To show immediate results and establish a broad base for future activities, including seminars for other communities, we enlisted several agencies to cooperate on the project. Included in our team are the City of Rocky Mount, the Rocky Mount Health Department, the North Carolina State Board of Health, Public Health Service Region III, and the Communicable Disease Center.

Primary Objectives

We started with the intention of realizing two primary objectives; to correct sanitation deficiencies as a prerequisite to establishing a sound vector control program and to utilize our progress as a model for other municipalities.

The six stages used in developing the program included:

- **A detailed survey of environmental conditions and sanitation deficiencies.**
- **Determining, from the survey, the objectives and formulating a plan for correction of deficiencies.**
- **Promoting acceptance and activation of the plan through public education and citizen participation.**
- **Promoting enactment and enforcement of appropriate legislation.**
- **Collecting and analyzing data to determine the program's effect on the public health and economy of the community.**
- **Using the project to promote similar programs elsewhere in the state.**

The survey determined such items as land use; housing classification to define socio-economic areas, deficiencies in sewage disposal and refuse storage, collection and disposal practices; drainage conditions; existence of rodent harborages; and related items.

The block-by-block survey took about 220 man-hours. Field notes were recorded on block survey forms and the information later tabulated according to the type of deficiency or condition. After completing the city, the personnel covered the fringe area two miles beyond the city limits. From this data we prepared six control maps in color.

Capture Imagination

To capture the public's imagination and cooperation we selected two items of general interest; refuse sanitation and mosquito control. This proved to be a prudent decision since the results were apparent to citizens, and the work was well publicized by the local newspaper. In addition, merchants paid for a full-page cooperative advertisement and numerous individual ads which stimulated the sale of approved containers for refuse storage.

Our survey indicated that 4,462 of

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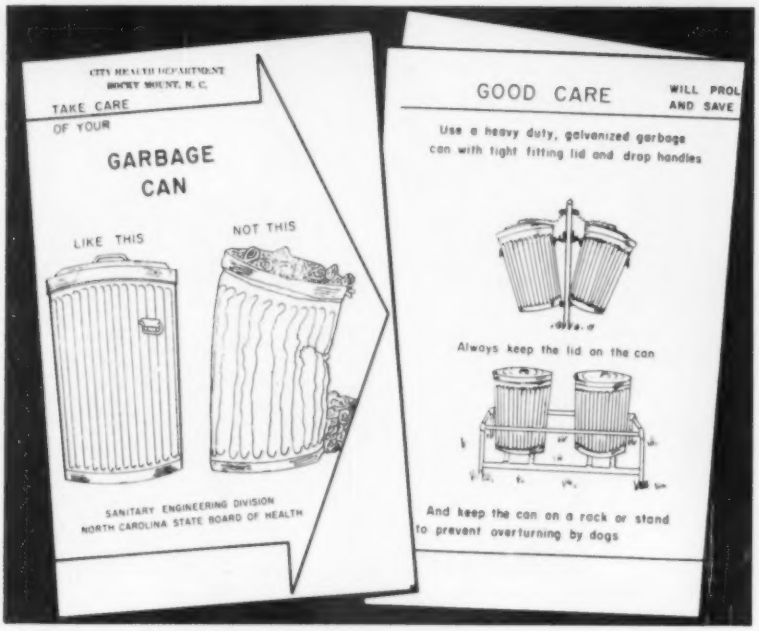
*Mr. Olmsted serves as technical supervisor of the Rocky Mount Vector Control Demonstration Project. The project and the preparation of this article was carried out with the cooperation of Dr. John S. Chamblee, health director, and Robert L. Hart, Jr., registered sanitarian, Rocky Mount Health Department and D. F. Ashton, medical entomologist, North Carolina State Board of Health.



Promotional material suggests the proper way to store garbage and care for containers.

the 8,114 units — or approximately 53% of the residential premises and 97% of the 210 food establishments— had inadequate or improper refuse storage. Many used the 55-gallon oil drum for refuse storage, which does not meet the city's ordinance requiring galvanized steel containers between ten and 30 gallons capacity, with close-fitting lids of the same rust-resistant material.

Enforcement Campaign

The survey also revealed rubbish accumulations on 549 blocks or 64% of all the blocks in Rocky Mount. With these facts on hand, we launched an intensive public campaign to enforce the provisions of the city ordinance on refuse containers.

We have promoted the use of raised racks for the containers and distributed plans on how to build wooden racks. A continuous educational program utilizing leaflets, public displays, posters, newspaper articles, and lectures, explained how garbage and refuse should be prepared for collection. The results were encouraging.

Municipal employees attached a red condemnation label to the unapproved containers. We obtained these free labels and other helpful and effective material from the Galvanized Ware Manufacturers Council. From July through September 1960, approximately 6,000 new approved containers were put into service in Rocky Mount, a very impressive figure in a city with a population of 32,000. In addition, most containers are on suitable racks or holders.

The city promoted the use of large detachable steel containers for schools, hospitals, and supermarkets, and other stores with large quantities of refuse and bought a hoist truck especially designed to transport the containers after merchants had agreed to purchase or rent 17 containers. This operation proved so popular that the system has been expanded to 50 boxes and a second hoist truck was purchased in February 1961.

As a result of a time-and-motion study of refuse-handling practices in the central business districts, Herman Drake, director of sanitation, was able to eliminate one open-bed vehicle and one man from the downtown route. To accomplish this, routes were revised, storage facilities improved, and some bins eliminated and replaced with detachable, removable, steel containers through the cooperation of some downtown merchants. One compactor truck with a three-man crew now services the downtown area.

These improved refuse-handling practices permitted the city to extend twice-weekly collection service with the same equipment and manpower to all private residents, including service to 562 residents in 616 annexed acres. Twice-weekly collection is sufficient to break the fly-breeding cycle and to prevent undue accumulations of refuse. The Sanitation Department has nine compactor trucks and four open-bed trucks and keeps a truck of each type in a reserve motor pool for emergencies.

Rocky Mount utilizes the landfill method of refuse disposal. One completed site now contains a swimming pool, lighted tennis courts, football field, merry-go-round, miniature train, and picnic areas. We are proud of this development and can show it to visiting public health officials as an example of what can be done with landfills.

The present landfill site, located just outside the city limits on private property on a sweeping bend of the Tar River, has an area of ten acres. Utilized for the past three years, its operation has improved since the onset of the Vector Pest Control Project.

At the request of the Director of Public Works, four acres of river bottom land were surveyed for use as a sanitary landfill. The plan of operation approved by the State Board of Health, was adopted and now serves as a model sanitary landfill demonstration.

A drag line and operator borrowed from the Street Department dug the trenches for this operation. At least four feet of original earth was left undisturbed between the 30-foot-wide parallel trenches. The high water table made it necessary to dig an outlet the width of the dragline bucket to the river from each trench to drain surface water. Upon completion of a trench, the outlet was back-filled with compacted earth. An all-weather-road assured easy access to the area.

The new operational plan eliminated such nuisances as scavengers, improper compaction and failure to cover each day's refuse.

Operation

The new plan employed a 30° ramp at the end of the trench. Exposed refuse is confined to the ramp or an area approximately 30-feet on each side. A tractor with a dozer blade compacts material throughout each day and at the end of each day's operation places six inches of compacted earth cover over the refuse to form a completed cell. As the trench is filled, the landfill is brought to final grade with a two-foot layer of compacted soil and graded to a slope of approximately 1% to allow for drainage. Earth being stockpiled during the operation can be used to

House-to-house contacts led to a massive clean up. Homeowners put material for collection at the curb.

When firewood or lumber are stored at least 18 inches off the ground rodents will not nest in the pile.

fill settled areas. The high grade sand excavated in some areas is trucked throughout the city for use on new construction projects which need it.

Pest Control

Mosquito and fly control offered another area in which we could make significant progress, readily evident to the general public. At the time of our survey, 777 premises harbored artificial mosquito breeding places. Other mosquito breeding sources included 151 ponds, sloughs, and other bodies of standing water. A total of 789 blocks, or 90% of the total surveyed, were found to have potential mosquito breeding places.

Permanent elimination of breeding sources and a good larviciding program offers the most effective and economical mosquito control program. Last year the mosquito control activities were highly effective through July but heavy rains in August produced a bumper crop of *Psorophora confinnis* mosquitoes. This situation created concern and our 1961 program includes better drainage and more intensive larviciding to prevent a similar occurrence.

Throughout last spring and summer we collected mosquitoes through light traps and made counts and identification of species. Analysis of this data proved a valuable guide for planning this year's pest control campaign.

Rocky Mount has been divided into rodent- and fly-control evaluation sections determined by socio-economic data collected on the initial survey. Twelve fixed representative blocks in each socio-economic section have been selected for counting the number of flies at bi-weekly intervals by using the Scudder grill method. During the fly season we take regular fly counts in each fixed block and in a random block within each area. When fly indices exceed five, the fly-breeding sources are located and eliminated. If this can not be done, chemical control measures must be applied. We have found that the introduction of approved refuse containers materially reduced the fly and rodent problem in the city.

Rodent Control

Rodent-control activities have been planned on the basis of a survey and evaluation made in selected blocks most likely to be rodent-infested within each socio-economic area of the city. We now have 85 rat-bait boxes with rat poison placed on private premises where evidence of rat infestation was apparent. These boxes, built by students in the carpenter shop of Booker T. Washington High School, cover approximately 30 blocks. This phase of the program has been received extremely well by the public and will be expanded.

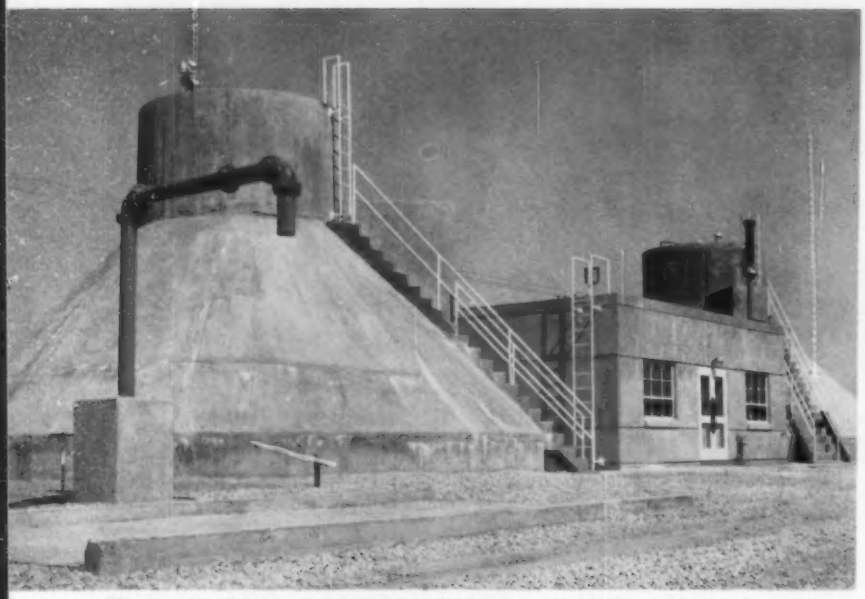
Three local radio stations cooperated with this phase of the program by running spot announcements on rodent control. Also, the North Carolina State Board of Health developed a cartoon-type educational leaflet to stimulate public participation in improving community sanitation to reduce rodent harborages and food supplies.

A model animal and fowl ordinance, recommended by the Board of Health to the Board of Aldermen for adoption, is in committee and if approved would give us the necessary control over the maintenance and sanitation of animal shelters that is basic to the establishment of a practical rodent- and fly-control program.

Our program also produced results in land use, housing, municipal water supply, and sewage disposal. After seeing what can be accomplished with a concentrated program, we plan to incorporate the Rocky Mount Vector Control Project into the permanent program of the Health Department. The city employed a registered sanitarian as a counterpart to the demonstration-project supervisor of the Public Health Service.

The counterpart assumed the responsibility for the direction of the local project, assisted by Mr. Macon B. Thompson, vector-control foreman. During the second year, the project supervisor started devoting more of his time to training public health officials from other communities.

The State Board of Health included seminars featuring the Rocky Mount program in its district sanitation meetings. As a result officials of other North Carolina municipalities are requesting assistance from the Board of Health in establishing "satellite" projects. We in Rocky Mount can see the results of our program, but the requests for assistance indicates others see them too and want to improve the environmental sanitation of their communities. ◄◄



These unusual "Kansas Digesters" eliminate most of the problems of scum formation associated with fixed-cover units.

The Kansas Digester

. . . spotlights the new sewage-treatment plant built by Pratt, Kan., to upgrade its 60-year sanitation program

By **R. E. CRAWFORD***

Pratt, Kan., treats all its sewage in a new plant—but is an old hand in the sewage-treatment field, having started with a septic-tank installation around the turn of the century. In 1929, the city constructed a primary treatment plant with separate sludge digestion. This was replaced by an activated-sludge plant in 1936 followed by the addition of a trickling filter in 1953 to provide secondary treatment. However, continued growth, increased per-capita water use and a change in the chemical composition of the raw sewage soon taxed the facility and made necessary further improvements in order to provide at least the minimum degree of purification which is required by the Kansas State Board of Health.

Rather than just add to the old plant, the city retained the firm of Wilson & Company, engineers and architects, Salina, Kansas, to make a comprehensive study of the entire sewage-treatment program and recommended the best solution for both the present and the future.

Study Report

The study report, delivered in June 1956, recognized three possible solutions:

- **Make necessary improvements to the existing activated-sludge plant.**
- **Convert the existing plant to a trickling-filter type.**
- **Construct an entirely new plant at a new and more desirable site.**

Our investigation of these solutions from the standpoint of initial cost, operation and maintenance cost and environmental considerations pointed to the desirability of building a new plant east of the platted city with the effluent to discharge into the nearby Minnescah River. The voters approved this plan in a general election in August 1958.

Unusual Digesters

The plant design employs conventional primary and secondary settling, standard-rate trickling filters and features two double conical digesters referred to in the Midwest as the "Kansas Digester." This digester is actually a modification of similar types used in European countries.

Each unit has an inside diameter of 37 feet and an overall water depth of 37 feet. With the conical construction, the water surface at the top of the digester is 11⅓ feet in diameter. Recirculated material returns to the digester above the water surface and all the gas produced must pass through this confined area.

We believe that this design will present a minimum of problems from the scum formation which occurs in fixed-cover digesters.

The bottom is also hoppered at a 1 to 1 slope to facilitate sludge removal and to utilize completely all digester volume.

The two digesters, constructed of reinforced concrete, may be operated independently. Only one is warmed, by a Walker Process sludge heater, utilizing either sewage gas or natural gas.

The plant has no sludge-drying beds but is equipped with a sludge-loading pipe and truck-parking pad. A tank truck spreads the digested sludge on nearby fields and during inclement weather it may be hauled to the city's sanitary landfill.

Pratt's new plant is designed for a domestic population of 10,000 persons and an additional industrial loading equivalent of 2,350.

The headworks structure contains a Worthington comminutor and a grit chamber with a Chain Belt grit collector. Both the comminutor and grit collector have by-pass channels

* Mr. Crawford is head of the Department of Sanitary Engineering, Wilson & Company, engineers and architects, Salina, Kan., and a member of five professional associations, including the American Society of Civil Engineers. He is also the author of various technical papers.

PLANT DESIGN DATA

Sewage flow	Gallons per day
Unit population flow	100 per capita
Plant design flow	1,000,000
Probable maximum flow	2,000,000
Probably minimum flow	250,000
B.O.D. loading	**Pounds per day**
Domestic sewage	1,700
Creamery wastes	45
Future industrial wastes	100
Garbage grinders	255
Total design B.O.D.	2,100

with the former provided with a manually cleaned bar screen. B.I.F. Industries flow transmitters and recorders measure and record both raw sewage and recirculated flow.

The dry-pit, wet-well-type pumping station contains three 700-gpm Fairbanks-Morse pumps operated by means of a float control. A float-operated butterfly valve in the wet well controls recirculation. These pumps discharge to the primary clarifier, from which point all flow through the plant is by gravity.

The two primary and two secondary clarifiers are identical in size; 35 feet in diameter with 9 feet of side water depth. Each has a maximum flow of 700 gpm, a surface area of 962 square feet, 110 feet of weir, a surface loading of 1,040 gallons per square foot per day and a weir loading of 9,090 gallons per lineal foot per day. They provide a detention time amounting to one hour and 38 minutes.

The two standard-rate trickling filters are 95 feet in diameter by 7 feet deep and contain 1.139 acre feet of media. On the design basis of 735 pounds per day of BOD per filter, they have a loading of 646 pounds per acre-foot. Filter efficiency at average flow, including the secondary clarifiers, is 85.5% and the calculated overall plant efficiency is 89.8%. This high degree of treatment is necessary, for the effluent enters the river about one-half mile above a fish hatchery operated by the Kansas State Forestry Fish and Game Commission.

Mechanical equipment on the filters and clarifiers consists of Walker Process distributors and clarifier mechanisms. The Marlow raw-sludge pumps can also be utilized as transfer pumps to move sludge from one digester to the other or to the tank truck.

Concrete Construction

The structures including superstructures are all reinforced concrete. The clarifiers and trickling filters are open to the atmosphere while the digesters have reinforced concrete domes. All units may be by-passed individually or the entire plant may be by-passed if it should be necessary.

The structure between the digesters contains the plant office and laboratory, sludge and building heating facilities, toilet room, sludge-pumping facilities and ventilation equipment.

Added Features

Additional features include a water system provided for sanitary facilities, irrigation and cleaning. A six-foot-high Cyclone chain-link fence encloses the entire plant area.

The plant, completed in November, 1960, is under the supervision of Joe McGraw. Construction took place under the administration of Mayor Clyde A. Simmons; Commissioners T. L. Shook and Quenten Hannawald; City Clerk H. B. Blachly and City Engineer Murl Phinney. Wilson & Company designed the facility and supervised construction. ◄◄

The raw sewage is pumped to the primary clarifiers (left, foreground) and then flows by gravity to the trickling filters (rear) and the final clarifiers (right).

The Student Union is typical of the contemporary architecture being employed at the new Methodist College near Fayetteville, N. C.

How a City Is Aiding a New College

. . . and at the same time making an investment in its economic and cultural future

By **AL STEWART***

Methodist College, a senior, co-educational liberal-arts institution supported by the Methodist Church, opened its doors to the first freshman class (125 students) in September 1960. The 650-acre campus is located approximately five miles from the central business district of Fayetteville, outside the city limits.

In 1956, less than a month after the announcement that the college would be near Fayetteville, the City Council and the Public Works Commission (an independent municipal agency responsible for providing water, sewer and electrical service to Fayetteville residents) held a joint meeting to decide what urban services the city would provide to the fledging institution. The major product of this meeting, attended by Terry Sanford, newly-elected governor of North Carolina and chairman of the college board of trustees, consisted of a resolution that the city would furnish water and sewer service and fire protection to the college community.

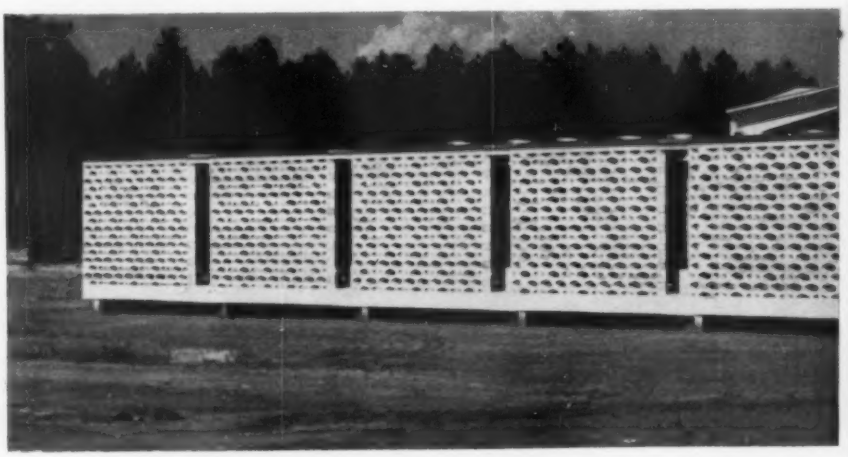
The initial step, taken in 1959, consisted of laying about 10,000 feet of 16-inch cast-iron water main from the northern city limits to the campus. In 1960 more than five miles of sanitary-sewer outfall lines, from eight-inch cast iron to 21-inch reinforced concrete, were constructed in order to extend service to the campus.

The city's Public Works Commission bore the cost of this work, almost $500,000 including right-of-way acquisition, plus an additional $37,000 for a sewage lift station at the southern fringe of the campus. The college had its contractor install fire hydrants, one within 75 feet of each building, and paid the bill. The nearest fire station is 3.5 miles south of the campus but the city's well-trained firemen, coupled with its Class III fire rating, assures the college of adequate fire protection at all times.

Regarding rates for water and sewer service, the college pays the regular outlying-area rate which amounts to double the rate for city residents.

At present the college provides, through a private firm, garbage collection and disposal and, through a night watchman, police protection. However, at the request of college officials the city police department dispatched several patrolmen to

*Mr. Stewart is the Librarian of Methodist College, Fayetteville, N. C., and also teaches a course in American government.



A front and side view of the science building.

direct traffic at our opening exercises in September 1960.

The most tangible service offered by the college to local citizens so far, is formal academic training. Courses are available during the day to housewives and other residents who can attend at that time, and at night to individuals unable to attend day classes. Approximately 20 students enrolled in evening classes for the semester which began in February. City Manager Gilbert W. Ray predicts that many city employees, both clerical and managerial, will enroll as additional evening courses are offered.

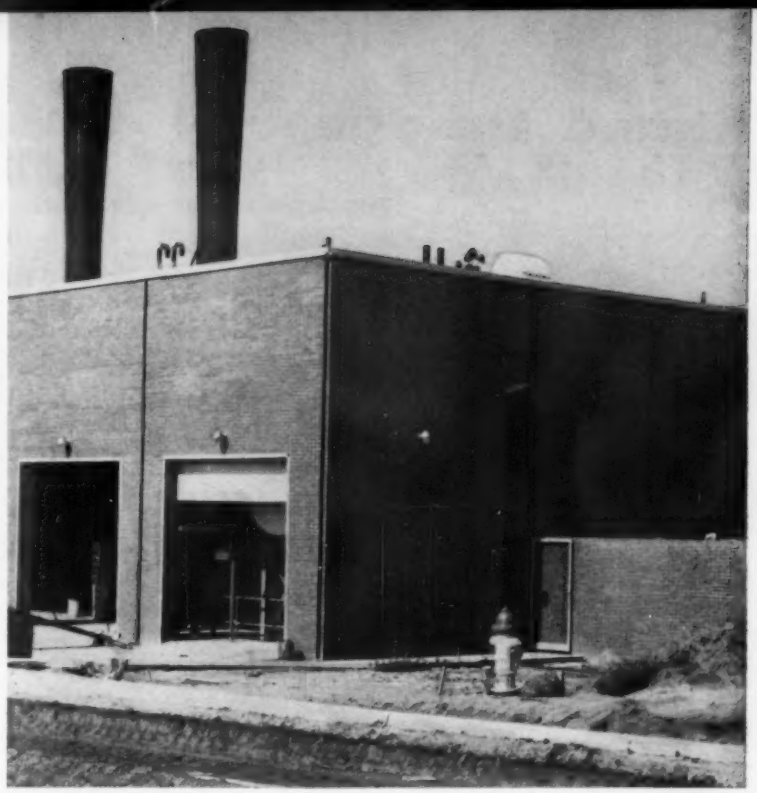
Public Works Administrator Ray A. Muench, Jr., predicts that a substantial group of his employes will also enroll in night courses in the next few years. The Public Works Commission encourages the educational advancement of its employees by paying the total cost of tuition and other fees with the understanding that the employee repays 60% of this cost through a payroll deduction plan agreeable to the employee. The employee pays a larger percentage of the tuition if the grade received in the course is lower than C.

City Manager Ray, PWC Administrator Muench, and former Mayor George B. Herndon each expressed a willingness to speak to municipal government classes at the college on practical issues faced by city officials in the formulation of policy for a municipality of 50,000 people. Fifteen students in my American government class attended a City Council meeting in May.

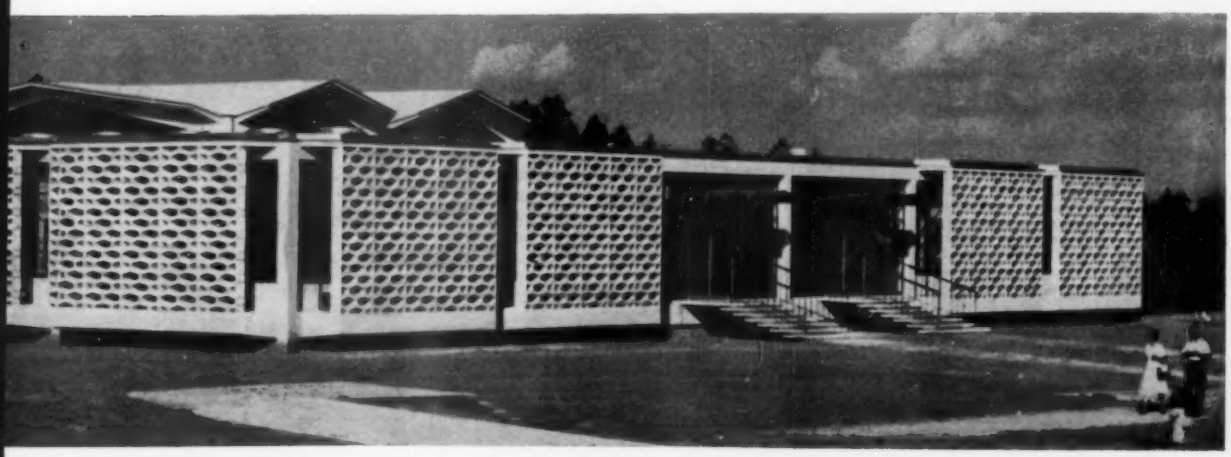
Library Service

Library service provides another area of cooperation between the city and college. The librarian of the city-county library, working in partnership with the writer as college librarian, has succeeded in supplying most of the books and periodicals requested by college students and faculty members. This is particularly important since the college has not yet had sufficient time to build an adequate book collection of its own. While some duplication is necessary for optimum service to patrons of both libraries, the cooperative effort eliminates unnecessary duplication.

To date the city's contributions to the college far exceed the college's contributions to the city. However, the city officials realize that increased student enrollment and faculty membership will make the college a tremendous asset to the community, enriching the cultural climate, and stimulating the economy. While community growth in recent years has been heaviest on the opposite side of the city, both Mr. Ray and Dr. L. S. Weaver, the president of the college, recognize that a residential development adjacent to the campus will grow rapidly in the next few years. ◄◄



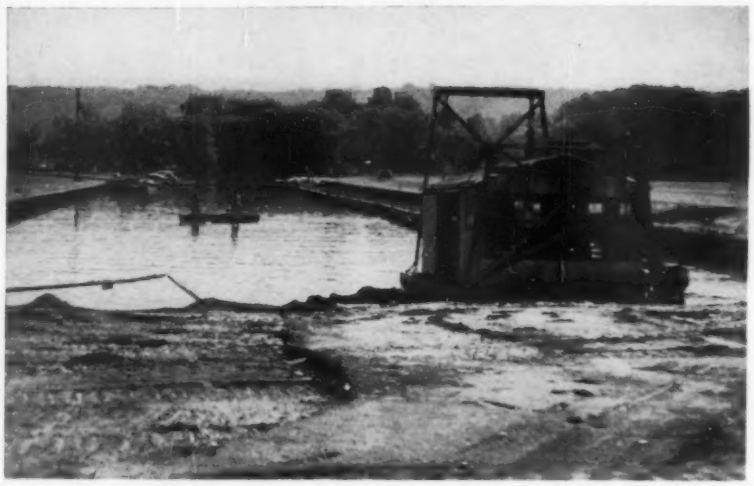
The college had its own contractor install fire hydrants near every building; this hydrant is located adjacent to the central heating plant.



Ithaca Dredges for a Marina

. . . and cleans out its 300,000,000-gallon reservoir as an extra dividend

By **CHARLES W. RICH***
Ass't. to Superintendent of Public Works
Ithaca, N. Y.



For an initial investment of less than $50,000, Ithaca, N. Y., is using a portable dredge to build a boat marina along Cayuga Inlet; keep city creeks free from silt; and clean the bed of the city's main reservoir.

The city first used its portable Morris Machine Works dredge to clean the creek beds in 1959. Ceaseless wave action from Cayuga Lake, together with fill deposited in the creeks during spring fast-flow periods, combined to create obstructing bars across the creek outlets. Annual dredging was the only practical means of keeping these streams navigable for small boats as well as of reducing the hazards of yearly flood waters.

Unusual Terrain

For a city of its size (population, 30,000), Ithaca is unusual because of the creeks and inlets flowing through it that require dredging. The home of Cornell University, Ithaca is situated on hilly terrain at the head of Cayuga Lake in the heart of the Finger Lakes country of central New York State.

In addition to Cayuga Inlet, a part of the New York State Barge Canal, the city has several other water arteries, such as Fall, Cascadilla and Six-Mile Creeks, flowing down from surrounding hills through the town to the lake.

The city owns an airport which is operated for small privately owned planes. In 1958 the city set aside 55 acres of this airport land as a site for a new municipal park and marina. This site fronts on both Cayuga Lake and Cayuga Inlet and is separated from another municipal recreation area by Cayuga Inlet.

Construction of the marina began last spring and was finished by July. Set at right angles to the Inlet, the marina channel measures 800 by 100 feet, contains 108 boat slips and accommodates boats up to 27 feet in length. Each double slip runs 25 feet from dock to dock.

To cut the marina channel to a depth of five feet, the dredge removed over 27,000 cubic yards of fill. Since the level of the land at the site of the marina channel was approximately four feet higher than the level of Cayuga Lake, a backhoe was utilized to aid in the removal of this earth lying above the water level. The backhoe was also used to build retaining dikes for the dredged fill.

The ability of the dredge pump and the discharge line to deposit dredged material to a distance up to 1,500 feet, enabled the city to raise the level of land on about four acres to a usable height of approximately five feet above the level of the lake.

Eventually, the city will construct two similar channels at the same site in order to meet future park needs. The three channels will then provide for a total mooring capacity of 322 boats.

When completed later this year, the new city-owned and operated park will offer other recreational facilities as well—football, softball, and baseball fields, an archery range, tennis courts and more-than-adequate parking lots.

Dredge Used

The most unusual use of Ithaca's portable dredge will be cleaning the bed of the city's main, 60-foot deep reservoir. The dredging operation will restore the original capacity of 300,000,000 gallons. Since the dredge is a hydraulic-pipeline type, it will allow continued use of the reservoir during dredging operations and will not contaminate the water.

The dredge has a hull that bolts together in three sections so that it can be easily transported by trailer. The hull is 16x30x3½ feet to assure a firm working platform for the dredging machinery. Equipped with a six-inch Morris CK pump powered by a four-cylinder GM diesel motor, the dredge, when its cutter ladder is angled at 45°, digs to a depth of ten feet and removes 40 cubic yards of mud, silt, sand and small gravel per hour. Its pumping distances range from 300 to 1,500 feet. ◄◄

---

* Mr. Rich joined Ithaca's Department of Public Works in 1949 and has been Assistant Superintendent of Public Works since 1951.

2 NEW FITCHBURG CHIPPER FEATURES

Give Your Engine Longer Life
Save Gas, Add Safety

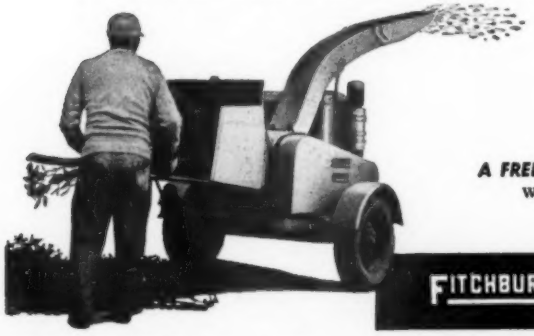
1 **EXTRA PROTECTION** for your crews with this NEW SAFETY STOP SWITCH that stops all moving parts of the chipper within seconds. Switch is within easy reach at rear so operator can flip it without moving from feed position. An important new feature of the Fitchburg Chipper, *already considered safest* because it has no hard-to-control flywheel.

2 **GREATER ECONOMY** with this NEW SOLENOID SWITCH* which allows the operator to quickly idle the motor between actual brush feedings. With the motor idling, you save on gasoline and engine wear; and there's less noise, which pleases the public. Your operator can use the switch easily because it is at the rear and handy.

CHIPPING IS SMOOTHER and faster with a Fitchburg because of its exclusive *spring activated feed plate.* This patented feed plate "gives" *automatically* under pressure. You can chip even large limbs (up to rated capacity) without killing the engine. And your crews are safer because the feeding action is more positive, smoother, with less whipping of the brush.

CHIPPING IS MORE EFFICIENT with a Fitchburg. The exclusive feed plate allows wood to be chewed up in small bites. This takes less power, and the engine can be run at lower r.p.m.—which is more efficient, saves you gas and cuts engine wear.

TROUBLE-FREE Fitchburg Chippers stay out of your shop so you don't lose valuable man-hours. These rugged machines are the choice of tree surgeons, line clearance contractors and others—men who depend on Chippers day after day to make money. Blades are made from special alloy steel to hold a keen edge for a long time, even with hard use. Fitchburg Chippers are well-engineered, come in four sizes to meet your needs: the largest handle limbs as thick as seven inches with ease.



A FREE BOOK "Chip Dollars" should be in your hands if you deal with brush disposal. 20-pages. Write for free copy—Dept. AC- 19.

*optional equipment

FITCHBURG ENGINEERING CORPORATION FITCHBURG, MASS.

This mark tells you a product is made of modern, dependable Steel.

Spring Scene...

with a hidden message for those who design, build and maintain busy streets

There's more to this picture of Washington, D.C. in early April than meets the eye. It's what you *don't* see that makes this scene so significant.

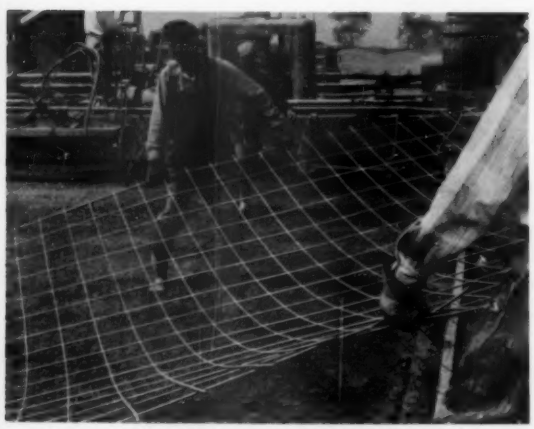
Paved streets in Washington is what this message is all about. Its purpose is to show you how *good* city streets or county roads can look after a hard winter . . . *before* the repair crews have gotten around. The reason you don't see gaping cracks, potholes and other types of roadway damage usually found after a long, hard winter is because over 600 miles of portland cement concrete street pavements in Washington (serving either as a concrete base for asphalt topping or conventional surface pavement) have been specified and built with welded wire fabric steel reinforcement.

Steel reinforced concrete pavements perform efficiently under constant stop-and-go rush hour conditions as well as under the hi-speed pounding of heavy thruway traffic. They last longer. They cost less to maintain because they have far fewer joints and all cracks are held tightly together.

Welded Wire Fabric adds 30% more strength to concrete pavement slabs. This is achieved because the steel reinforcement distributes the load transfer and reduces stresses in the slab by about 30%, thus diminishing the pavement's tendency to develop cracks, and prevents the progressive opening of any cracks which do occur. Reinforced pavements provide a safe, smooth riding surface that lasts.

Today USS American Welded Wire Fabric is stronger than ever. Minimum tensile strength is now 75,000 psi. Minimum yield strength is 60,000 psi. A 100% machine-fabricated product—ready for immediate placement—it is available in weights, gauges and dimensions to your exact specifications. For more information, contact our nearest Sales Office, or write direct to American Steel and Wire, Room 1275, Rockefeller Building, Cleveland 13, Ohio.

USS and American are registered trademarks

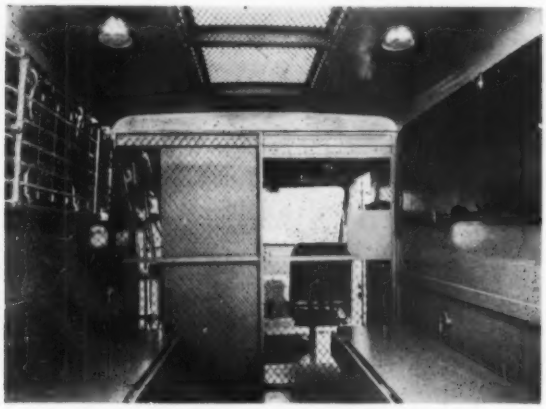


Workers place sheet of 50-lb. welded wire fabric on a freshly poured concrete base which will later be topped with asphalt.

American Steel and Wire Division of United States Steel

USS

Chief F. W. Story and two associates inspect the six ambulances that are now part of Cleveland's ambulance fleet.



The seats slide forward if needed. The right-hand seat can face either forward or backward.

Heavily-screened skylights admit daylight into the interior of the ambulance.

What Cleveland Likes for Police Ambulances

For a good, sturdy, police ambulance that will serve seven days a week, 24 hours a day, Police Chief F. W. Story of Cleveland, Ohio, likes a vehicle that is not too high, with a relatively short wheelbase, an engine having plenty of pep and power, and a body having plenty of strength, versatility and room. The six new police ambulances that Cleveland recently acquired show how they fit his specifications.

The ambulances have an overall height of 103½ inches and inside dimension of 72 inches. The overall length is just under 217 inches with 120 inches being devoted to the load compartment. A six-cylinder, 140-hp Chrysler engine provides the necessary pep and getaway.

Each ambulance is equipped with two stretchers, a collapsible cot, folding chair, complete oxygen and first-aid equipment, and a resuscitator.

In the driver's compartment are a pair of swivel seats that can be pushed forward if desired. The right-hand seat can face to the front or rear. In the load compartment, the body has heavily screened translucent skylights that are integral parts of the one-piece fiberglass roof assembly. The natural light benefits the care of accident cases and the transfer of patients during daylight hours and speeds locating and handling of emergency and first-aid equipment.

The six ambulances, all products of the P.D.Q. Division of White Motor Company, form part of a fleet of 19 such vehicles used by the Police Department for transfer of patients, and for first-aid and patrol duty ◄◄

20% MORE TRAFFIC...25% less congestion

in Minneapolis with EAGLE'S NEW "EC" SYSTEM

The "EC" MASTER CONTROLLER is located outdoors on the highway's median strip. Severe temperature and humidity changes have not, in any way affected either the Master or Local operation.

OLSON MEMORIAL HIGHWAY, Minneapolis, Minn.
(less than one mile from loop area)

THE "EC" LOCAL CONTROLLER

is similarly located at eleven intersections along a one mile stretch of one of Minneapolis' heaviest traveled areas. Each of the Locals is capable of receiving a minimum of 224 traffic function messages from the Master Controller and transferring these messages to the intersection's traffic signals.

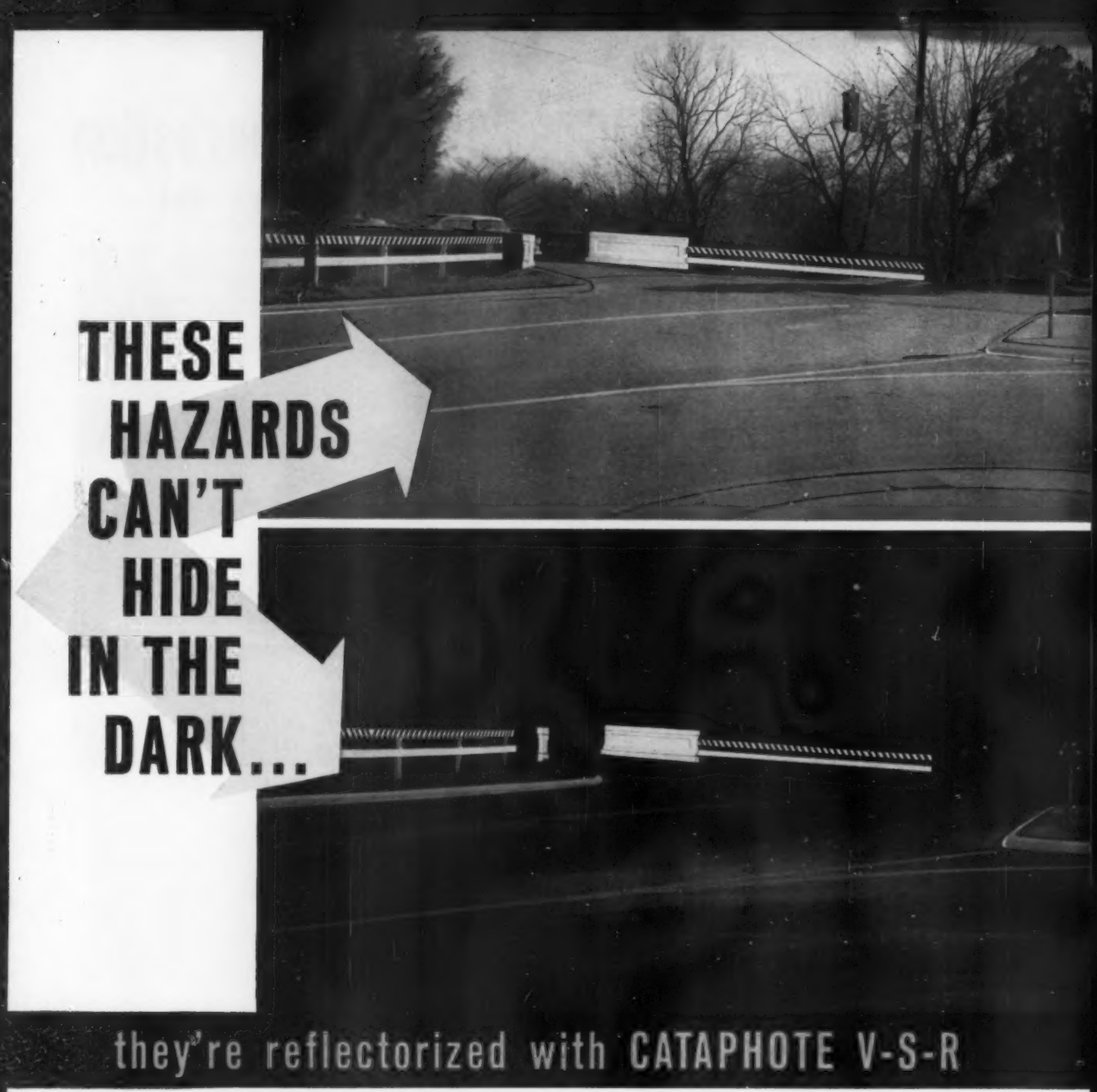
MINNEAPOLIS REPORTS, "during peak traffic loads it is not uncommon for the volume density on Olson Memorial Highway to reach levels as high as 200% over normal periods.

"Nevertheless, a continuing series of surveys and on-the-scene checks now reveal that congestion has been reduced 25%.

"As the news of the reduced congestion spread, more and more of the city's rush hour motorists chose this route which they had previously avoided. Yet, traffic still moves faster and more freely than ever before, despite an overall increase of 20%.

"We have every reason to be more than satisfied with the performance of this new "EC" system. It has achieved a dramatic alleviation of what was rapidly becoming one of our worst traffic problems."

BLISS
EAGLE SIGNAL COMPANY, Moline, Illinois
A Division of the Gamewell Company
An E. W. Bliss Company Subsidiary
Eagle Equipment Saves Lives — Saves Time
TRAFFIC ACTUATED CONTROLLERS
LANE & BRIDGE CONTROL
TRAFFIC SIGNALS
MONOTROL® SYSTEMS
MULTI-DIAL CONTROLLERS
ONE SOURCE — ONE RESPONSIBILITY for all traffic control needs.



THESE HAZARDS CAN'T HIDE IN THE DARK...

they're reflectorized with CATAPHOTE V-S-R

Approach this Jackson, Mississippi intersection in daylight or darkness . . . you're instantly aware of the sharp delineation of curbs and traffic islands . . . barrier boards and bridge abutments. Bright by day . . . brilliant by night . . . these traffic hazards are *reflectorized* with Cataphote V-S-R . . . Vertical Surface Reflectorization.

Available in kit form, Cataphote V-S-R consists of specially formulated bead binder (white or yellow), automatic air operated applicator and Cataphote "101" extra high intensity glass spheres. Easily applied, V-S-R is one of the greatest aids you can provide the motoring public.

Men who lead the way in traffic control have been quick to recognize the safety values of Cataphote V-S-R . . . and use it extensively. V-S-R can help you be a pace setter, too. For more information, write for Catalog V-160.

CATAPHOTE CORPORATION

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MANUFACTURERS OF REFLECTIVE TRAFFIC PRODUCTS

The new plastisol cones guard a freshly painted directional arrow.

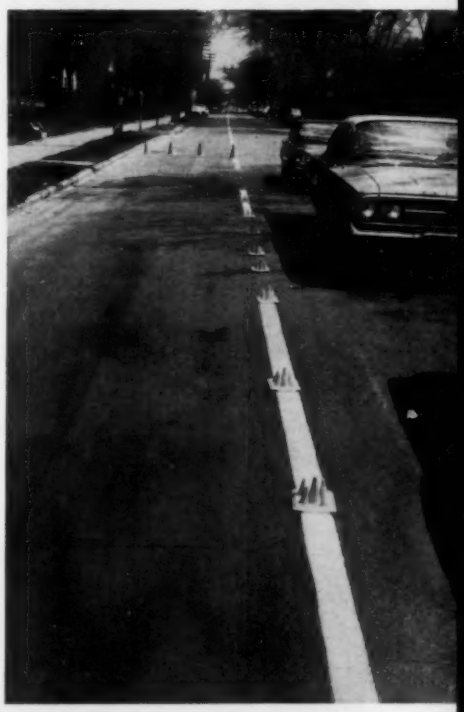
Oshkosh Traffic Cones Show an Eight-Ton Rebound

Oshkosh, Wis., recently switched to a new, flexible traffic cone in preference to the conventional ones made of rubber. The new cone is formed of plastisol, a compound in the general plastic family. After "torture" tests in which an eight-ton roller ran over both, City Manager Ray Harbaugh feels that the new cones are superior to those used previously.

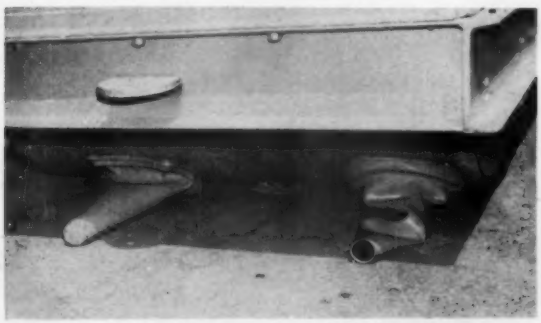
To make the test, Street Superintendent Kenneth Robl placed cones of each type on the pavement. He then directed that the roller pass over both several times, occasionally instructing the operator to swivel the rear roller over the cones. The test destroyed the rubber cone beyond any further use but did no visible damage to the plastisol cone.

These cones, made by Jobet Industries, Inc., Oshkosh, Wis., also demonstrated a resistance to gasoline, oil, tar, paint and cold-weather breakage. Cones used by the city have been impregnated with a brilliant fluorescent red which reflects light and can be seen for many blocks. They also can be lighted from within, using lights with small dry cells, thus making them excellent markers for safety islands.

The cones are 18 inches high, tapering from a little more than two inches at the top to eight inches at the bottom with an eleven-inch-square base. ◄◄



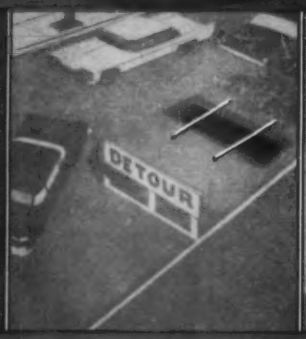
A newly painted traffic line is protected by the plastic "line enforcers."



A Buffalo, Springfield roller tests three traffic cones; a rubber cone (right) is showing distress.

The rubber cone (left) is headed for the junk pile while the plastic cones have recovered completely

here are 8 reasons why the ELECTRO-MATIC® RADAR VEHICLE DETECTOR solves more traffic signal problems:

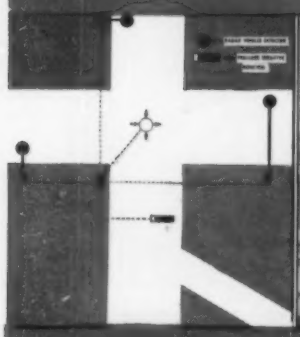


1. Now the new Model RD-2 Radar Vehicle Detector meets requirements of all types of traffic-actuated signal controllers.

2. Convenient overhead installation eliminates costly, time-consuming excavations and detours encountered with other detectors.

3. Beam width can be adjusted by remote control to cover from one 9-foot lane, up to three traffic lanes as desired.

4. Operation is not subject to traffic wear and is unaffected by parked cars, weather, or extraneous radio interference.



5. New "one car equals two impulses" feature permits RD-2 to be used in combination with existing pressure detectors on same traffic phase.

6. Radar Detectors may be mast arm mounted on existing wood or steel poles using standard luminaire-type mast arms.

7. Mounted on rigid 2-wire span, one or more Radar Detectors can be suspended in positions difficult for other detectors and mountings.

8. Keeps costs down because of ease of maintenance and removal in the event of roadway changes.

Give your intersections the newest in vehicle detection, and in doing so, save both time and money. Write for Bulletin D-165.

AUTOMATIC SIGNAL DIVISION

EASTERN INDUSTRIES, INC. • NORWALK, CONNECTICUT

A Master Traffic-Controlled System

Every city reaches a point where its traffic signal system must be restudied. This study of the Wichita, Kansas, system was accomplished over a period of two years.

Our first step was to ask one hundred cities about their existing master control systems and their present satisfaction. Forty-five of the cities said they planned to replace or modernize their systems.

In view of this widespread need for a change, perhaps our thinking for Wichita on this subject would be of interest to other cities. Recognizing that each city has its peculiar problems, I have endeavored to keep away from the solutions that fit Wichita specifically.

There are 203 signalized intersections within Wichita (population 254,000). Forty of the eighty intersections, which are within the downtown area, were interconnected in 1939. It is proposed to add 14 signalized intersections to the downtown grid and interconnect the entire 94 signalized intersections in and around the central business district.

The interconnection of a new and expanded downtown master control signal system with its ability to match the daily variations in traffic will reduce congestion, delay, inconvenience, and other ills of the existing signal network. It can serve as another tool of the traffic engineer in increasing the desirability of the central business district and it will provide the fire department with a modern fire-lane control system.

The two types of master control systems are the "traffic supervised" and the "pre-timed" control.

A pre-timed master control system is one in which the many local intersection controls are supervised by one master controller responding to a pre-determined program of function changes established by the traffic engineer. Using basic field information an engineer can develop a program capable of changing the local intersection control as the traffic pattern varies. The cycle length at each controller will increase and decrease with the traffic-volume fluctuations and the offset relationship between the intersections will vary with the traffic demands; all will be predicted by traffic engineering analysis.

A traffic-supervised system, on the other hand, responds to actual traffic conditions existing at the moment. The supervisory master receives its information from traffic-sampling detectors located within the street system. A part of the master controller is a computer which analyzes the data from the several sampling detectors. The master controller then dictates to the local units the time split, cycle length, and offset relationship based on the computer's choice of critical traffic conditions as found on the street system.

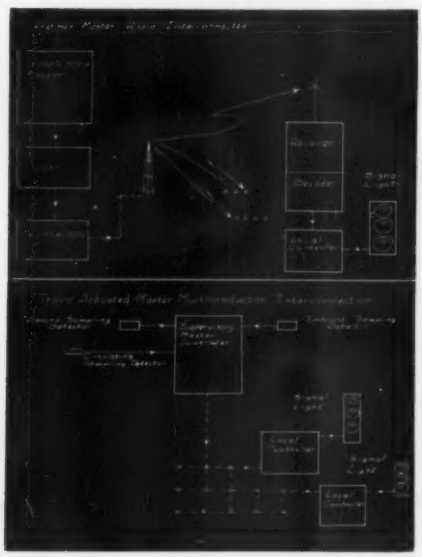
First, the master control system cannot be superior to the local intersection controller. The local controller dictates the flexibility of the entire system.

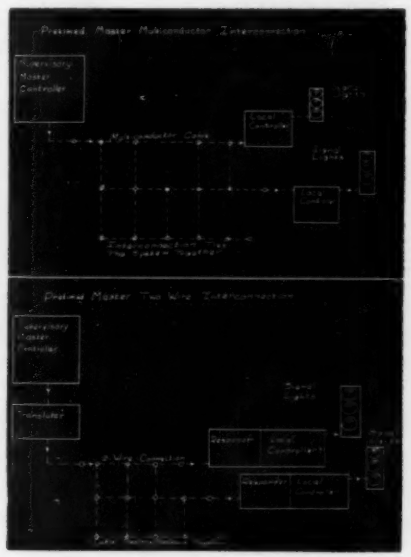
The master controller can send its supervisory information to the local controllers by multiconductor cable or by two-wire and radio interconnection. The various functions anticipated are cycle-length changes, offset relationships, intersection "split" and fire-lane control. With two-wire interconnection the commands of the master are pulse-coded onto the two wires and decoded at each local control unit. Coded commands are transmitted to the local controllers where radio interconnection is used. At the intersection, a radio receiver receives the transmitted command and a translating unit decodes the message for the local signal controller's use.

The amount of intersection equipment needed in a master-control interconnected signal system depends on the choice of systems and the method of interconnection. A pre-timed system can utilize existing local controllers. Many cities choose the master control that would use their existing local controllers. It should be repeated that the efficiency of any master control system is no better than the local controllers.

Using the knowledge of the various master-control

(Continued on page 131)

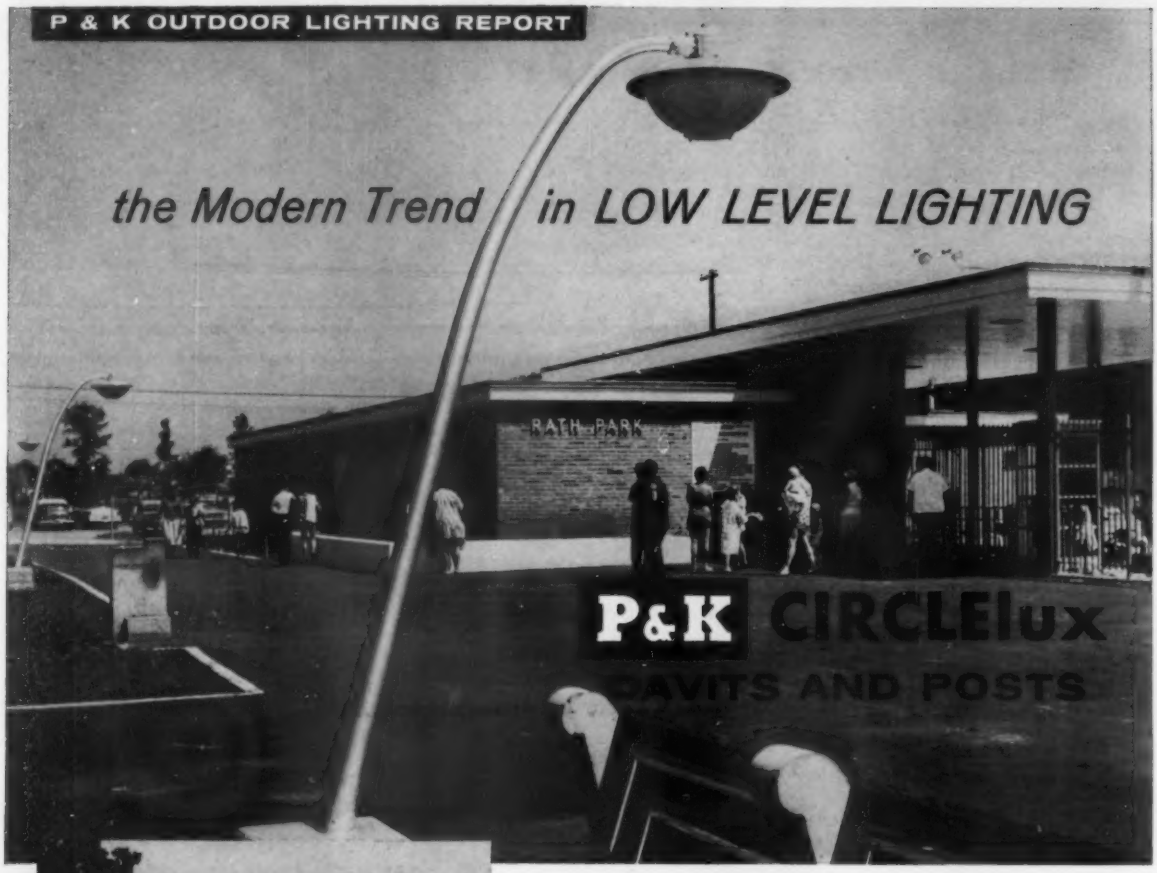




Schematic drawings illustrate the various master control systems and methods of interconnection.

P & K OUTDOOR LIGHTING REPORT

the Modern Trend in LOW LEVEL LIGHTING



TOP PHOTO: Location: Rath Park, Franklin Square, L. I., N. Y.
Architect: Herbert D. Phillips
Consulting Engineers: Barstow, Mulligan & Vollmer

LOWER PHOTO: Location: Fairleigh Dickinson University, Madison, N. J.
Electrical Consultant: H. L. Sykes

modern lighting at a realistic cost

Here are two contemporary outdoor lighting installations – one an all new municipal swimming pool and recreational area – the other, a prominent New Jersey University. Both chose the P&K all aluminum CIRCLElux lighting package to illuminate and compliment their roadways, walkways, landscape and architecture.

The sweeping lines of the P&K CIRCLElux davit blend with the modern one story architecture of the Rath Park Swimming Pool. Yet, the modern, but stately, design of the P&K CIRCLElux post is in good taste with the traditional architecture of Fairleigh Dickinson University. The CIRCLElux lighting package is the correct low level lighting choice to compliment almost all types of architecture.

The P&K CIRCLElux is available in a wide range of davit styles and mounting heights. The post is available in one basic design but at various mounting heights and with the CIRCLElux you have a choice of three light sources – incandescent, mercury vapor and fluorescent. This combination of luminaires and davits or posts will enable you to specify "packaged" lighting units. This means easier specifying by using matched components which in turn can customize your lighting projects.

Send in your reservation now for the *new* CIRCLElux catalog.

P&K PFAFF & KENDALL 84 FOUNDRY ST., NEWARK 5, N. J.

(Continued from page 129)

systems as discussed within this report and having cost estimates and a knowledge of the local conditions, the first decision will be the choice of master-control units. Shall it be the traffic-supervised or the pre-timed? Since the traffic-supervised style of master control responds directly to the actual traffic conditions, it is considered to provide the best and most flexible master control. We are of the opinion that a traffic-supervised system is the best traffic-signal network control available; it is also the most costly.

A pre-timed master-control system has flexibility based on the traffic engineer's ability to predict traffic flow and its variations. The usual traffic pattern can be predicted and accounted for within the possibilities of most pre-timed masters.

The method of interconnecting the master controller with the many local controllers also offers a choice of desirable options. The use of multi-conductor cable calls for knowledge of space available in, and structural condition of, the existing conduit. A two-conductor interconnection system is feasible, though it does require the additional equipment and maintenance of translators and responders.

Radio interconnection perhaps offers the most versatile means of interconnection. However, the initial cost of radio interconnection is high and also requires maintenance knowledge and facilities.

Our recommendation for Wichita is a master-controlled traffic-signal system composed of a pre-timed master interconnected with the 94 local controllers through two-wire cable or radio interconnection. An alternative of traffic-supervised equipment can be added at any time if traffic volumes increase at a later date. The local controllers then would be given coded instructions from the computer rather than the pre-timed program under adverse traffic conditions. If it is believed to be in the better interest of the city to invest additional money in a traffic-control system, the traffic engineer would recommend total traffic-supervised control.

PAUL B. GRAVES
City Traffic Engineer
Wichita, Kan.

Four Multidial Signal Systems Integrated

Citywide coverage with traffic signals is expensive but the fact that more and more cities are installing such systems indicates that they are worth the cost.

A complete system is a sort of tranquilizer for local traffic. Gone is the jumpiness of leaning on a number of different types of systems. For instance, four or five years ago, Columbus, Ohio, began to tire of its single-dial reset equipment. While many intersections were interconnected there was no master control.

There was no time in a big city like Columbus to adjust for rush-hour traffic. A survey in 1957 revealed the discrepancies and needs. In planning for an adequate system, civil-defense measures were incorporated. Atomic targets brought civil-defense funds.

The system chosen was Eagle Signal's Monotrol with multidial controllers. Now four interconnected progressive multidial systems control 298 intersections on 75 miles of Columbus streets. This equipment supplies the flexibility for normal and rush-hour operations. The routes controlled included those for civil defense evacuations. Interconnections were made with 75 miles of new 14-gauge three-conductor neoprene-covered cables, two of which were used for the Monotrol system.

When the arterial streets had been signalized, the secondary streets and isolated intersections were equipped and connected to the master, one by one. The work was performed by the Traffic Regulation and Engineering Division's shop under H. J. Swain. This shop also maintains the parking meters, signs and markings. The cost was over $700,000, including equipment and installation, and roughly one-third was paid by the Civil Defense Administration.

The new system offers 31 functions of which nine are presently in use. They include resets for progression, flashing for off-peak hours, fire lanes, alert, and evacuation.

JOHN L. GALLAGHER
Chief Traffic Engineer
Columbus, Ohio

Albert G. Giles, director of public safety (left), discusses the city's master traffic-control system with the author.

Faster, Smoother Traffic Control
at Merging Street Intersections . . . . . .
CROUSE-HINDS
New APT-1 Major-Movement Timer
resembles mechanical mind; speeds constant-flow,
random-heavy or rush-hour traffic

JUST 4 TIMING KNOBS GIVE
5-to-30-second initial green
2-to-14-second green extension
10-to-90-second extension limit
2-to-8-second clearance

Never before such latitude of choice for the traffic engineer. Never such near-human memory and response to traffic fluctuations. Whether actuated or non-actuated, the APT-1 inserts its Stop-Go signals in the sequence of the Main Controller with a smoothly-joined effectiveness that suggests reasoned judgment and foresight.

Yet when traffic is heavy on all streets, the APT-1 operates with clockwork regularity, signalling at the same point in each cycle. Should detector failure intervene, a re-call switch provides the same cycled movement for the APT-1 street.

Adds Major Traffic Phase to Actuated Controller

With APT-1, you can add a third or fourth major phase to any actuated controller. And without adding a parent phase! Once actuated, the APT-1 follows the next phase. It will even dwell until a call comes from another street. No waiting for some sequenced, but unused phase to time out. And it never hogs the right of way. After each actuation, it samples the other detector circuits. Then, a vehicle call on any or all of the Main Controller phases causes APT-1 to block itself from the cycle until all prior calls have been answered.

CROUSE HINDS
REG. U.S. PAT. OFF.

NO RE-WIRING NECESSARY
APT-1 can be plugged into the Main Controller quickly and easily. Can be adapted to handle specific intersection problems. Write or wire for details.

MAIN OFFICE: SYRACUSE, N.Y. FIELD OFFICES: Albany, Atlanta, Baton Rouge, Birmingham, Boston, Buffalo, Charlotte, Chicago, Cincinnati, Cleveland, Corpus Christi, Dallas, Denver, Detroit, Houston, Indianapolis, Kansas City, Los Angeles, Milwaukee, New Orleans, New York, Omaha, Philadelphia, Pittsburgh, Portland, Oregon, St. Louis, St. Paul, Salt Lake City, San Francisco, Seattle, Tampa, Tulsa, Washington. **RESIDENT REPRESENTATIVES:** Baltimore, Md., Meriden, Conn., Reading, Pa., Richmond, Va., Springfield, Mass.
Crouse-Hinds of Canada, Ltd., Scarborough, Ont. Crouse-Hinds-Domex, S.A. de C.V. Mexico City, D.F. Poterco, Sao Paulo, Brazil

Traffic Paint Test in Milwaukee

Milwaukee buys its traffic paint on the basis of an actual test of the reflective yellow and white road markings. For example, last year City Purchasing Agent Andrew L. Lehrbaummer arranged to apply eight samples of paint from different manufacturers to a busy viaduct and observed them for six winter months. After the test, only brands which showed a long life in the Milwaukee climate and retained good distinguishing color during the entire test were qualified for future bids. ◄◄

Milwaukee tested and observed eight different samples of paint on this busy viaduct for six months.

The Auto Gets a Defender

At the recent meeting of the U. S. Conference of Mayors held in Washington, D. C., one speaker denounced the family auto as the destroyer of the core of the nation's cities: and another praised it for bringing blessings that far outweighed the problems that it brings.

George Alpert, president of the New York, New Haven and Hartford Railroad, castigated the "cult of the automobile" and quoted Lewis Mumford, the "Gloomy Dean" of the modern urban society, who said that "the American way of life is founded not just on motor transportation but on the religion of the motor car."

Mr. Alpert said that he would like to, and could, provide comfortable cars with foam-cushioned seats, plastic walls and nylon seat covers easy to keep clean, tinted windows that absorb the glare, infallible air-conditioning, and on-time performance. However, such a ride would cost more than the commuters in metropolitan areas are ready to pay. He asked that the rails be freed from "destructive" tax policies, "subsidized" competition, and "discriminatory" regulations. With these liberations, he feels that the rails can survive as private enterprise. The automobile, he argued, has its place, but weaving or crawling through traffic to get to work during peak commuting hours is not that place.

In contrast, Rex Whitton, Federal Highway Administrator, Bureau of Public Roads, expressed enthusiasm for the motor vehicle. He admitted that in a number of cities, freeways are overloaded for peak periods. However, he argued that the reason is that no metropolitan area has yet completed an urban freeway system. He feels confident that when an urban-area freeway system is completed, the interconnected radials, inner loops, and outer beltways (endorsed frequently as "traffic strainers" by THE AMERICAN CITY) will relieve congestion and provide benefits to the core area and the entire city.

He quoted studies showing that in many cities from one third to one half of all vehicles on downtown streets are only passing through on their way to other points in the city, or beyond. They are downtown, he said, only because the existing street system funnels them there en route to their destination. He quoted other studies that show that only 22% of the motorists go downtown in cities under 50,000 and only 5% in cities of over a million. Thus, he argued, the transportation problems are not just confined to the central business districts but are spread throughout the urban area.

Since 1944, the Bureau of Roads has conducted over 170 comprehensive studies of metropolitan-area travel habits and currently has similar planning studies under way in 35 more.

These cooperative federal-state-city transportation studies examine total travel by all modes within the urban and metropolitan areas. These studies, Mr. Whitton explained, relate travel to land use and economic factors and form what he feels is a major breakthrough in city and regional planning. ◄◄

San Francisco Answers These Questions

What does the city get from its parking meters?
How's parking in the central business district?
What's new in your signals?
Do you use large or small striping machines?

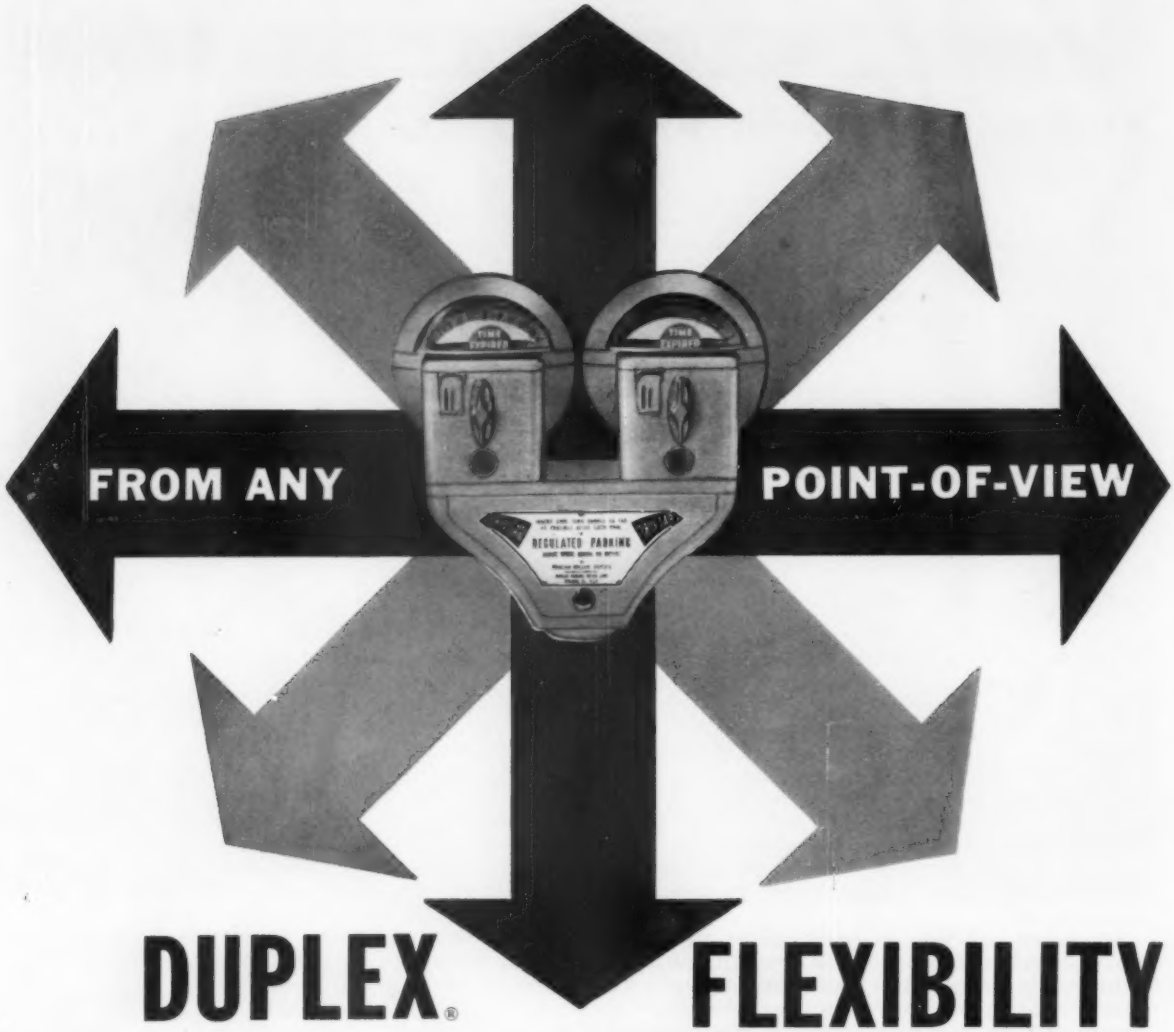
San Francisco's 12,500 parking meters averaged $120 each in 1960. Net revenue after policing collecting and repairs amounted to 64% of the gross.

While parking has not been abolished in the business district, we forbid stopping extensively during peak-traffic hours. This provides more roadway and increases street capacity.

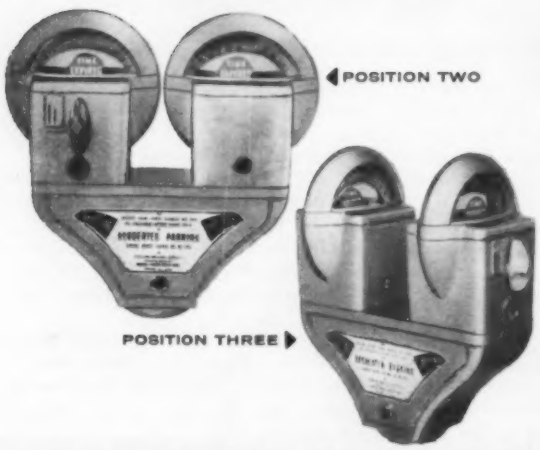
New master equipment will control the fixed-time signals at one third of our signalized intersections, mostly in the business district. Very little electronic control will go in at this time, though we are studying it for some main routes.

We require a large striping machine working throughout the year. City area is only 47 square miles. Annual traffic mileage is 1,890 million vehicle miles. Since weather is not a problem we feel that a continuous painting program is the most efficient.

ROSS T. SHOAF
City Traffic Engineer
San Francisco, Calif.



DUPLEX® FLEXIBILITY IS UNEQUALLED!



Versatile Duncan Duplex provides proper facing positions for *positive* meter identification regardless of the method of parking.

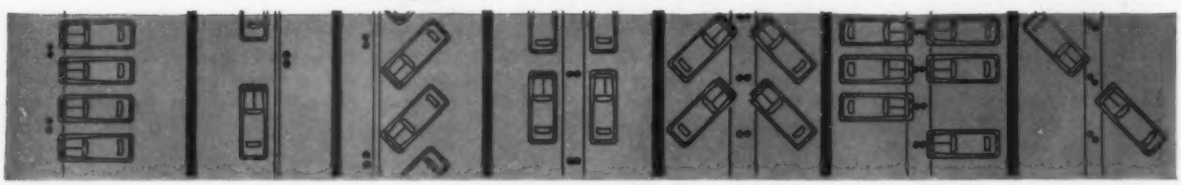
Eliminates motorists *confusion* and loss of good-will prevalent with ordinary double or twin meters.

Available in a wide range of time and rate combinations utilizing pennies, nickels, dimes, quarters and good-will tokens to meet *all* curb and off-street parking requirements.

DUNCAN PARKING METER

Division of NAUTEC Corporation

835 NO. WOOD STREET • CHICAGO 22, ILLINOIS



The new lighting provides 5 footcandles and gives the area a brilliance that contrasts strongly with . . .

One of the Five Brightest

By **ROBERT D. SCHARZ**
Mayor
North Kansas City, Mo.

. . . the old lighting whose 1.5 footcandles cast gloomy shadows over downtown North Kansas City.

North Kansas City, Mo., recently upgraded what many would consider a good street-lighting system, making it into one of the five finest in the nation. Working with the Kansas City Power and Light Company, we have replaced incandescent lights with T-shaped fluorescent luminaires which have raised the intensity of illumination at the street level from 1.5 to 5 footcandles.

The old lights were not unattractive. They were about 25 feet high, mounted on graceful, tapered standards with five-foot curved sidearms. The lights were spaced at about 100-foot intervals. Nevertheless, one could see the store fronts only dimly and cars parked at the curb were not distinct.

In contrast, the new Line Material fluorescents, mounted on Kerrigan Iron Works standards, provide nearly six times as much light per pole. The three luminaires in each unit furnish 87,200 lumens, compared with 15,000 from the single-lamp incandescents.

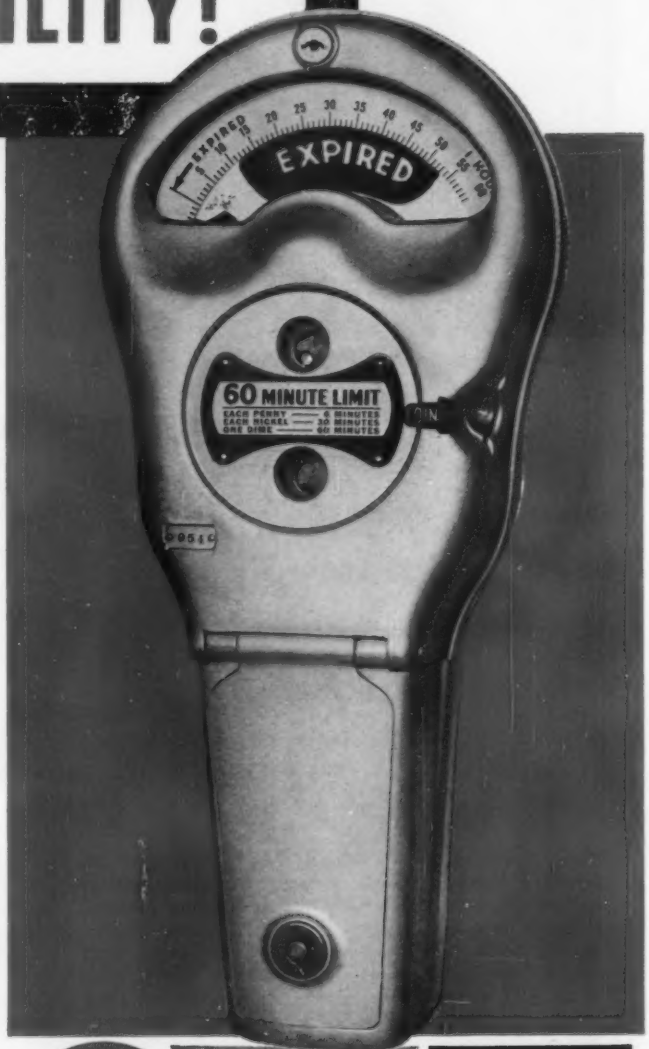
The new T-light fixtures are each six feet long, arranged three to a pole, and are mounted 30 feet above the roadway. We now have 34 lights, replacing 44 of the old.

With these new lights, our downtown has emerged to a new brilliance that makes it more attractive to the shopper, safer, and much more pleasant. ◄◄

The best-lighted public streets in the nation are generally thought to include:

	footcandles
State Street, Chicago, Ill.	14
Hollywood Boulevard, Hollywood, Calif.	10
69th Street, Upper Darby, Pa.	8
Main Street, McPherson, Kan.	7
Armour Road, North Kansas City, Mo.	5

GIVE YOUR CITY PARK-O-METER PROFITABILITY!



Your city's parking meter system can be a profitable operation with Magee-Hale Park-O-Meters.

Park-O-Meters are automatic and accurate. They can be adjusted to meet every need.

Let a Park-O-Meter parking expert call on you to show you how you can have a profitable parking meter system.

LOW MAINTENANCE

. . . costs with Park-O-Meters. No operating parts are exposed to the weather or vandals. Rate ring is adjustable to permit time, rate and coin changes *on the site* . . . no shop overhaul necessary!

REDUCE ENFORCEMENT COSTS

. . . with Park-O-Meters. Large "expired" signal is visible from street by mounted patrolling officer . . . no sidewalk checking necessary.

- Instant, on-site service
- Single coin slot accepting any combination of nickels, dimes, pennies, quarters or tokens
- No exposed working parts

P O M

MAGEE-HALE PARK-O-METER COMPANY
3909 Willow Springs Road • Oklahoma City, Oklahoma

LEADING THE INDUSTRY FOR 25 YEARS

Night on the athletic field of Cleveland's Brush High School where four poles hold fixtures housing G. E.'s Quartzline lamps, which resist weather and maintain their light output throughout their life.

Concentrates More Light on the Field

By employing Quartzline incandescent lamps, G-E engineers more than doubled the amount of light on the field without increasing the wattage consumed or the number of bulbs and fixtures employed by a previous lighting system. The field belongs to Brush High School in Cleveland, Ohio. Poles were reduced from eight to four. Two poles are used on each side of the football field.

By controlling light more accurately than equipment previously used, these new fixtures concentrate a higher percentage of light onto the playing field.

The 64 1,500-watt Quartzline lamps illuminate the field evenly to a level of 20 footcandles, as compared with eight under its previous (1946) system. The new lighting level is that recommended by the Illuminating Engineering Society for Class IV stadiums seating 5,000 spectators.

These lamps come in weather-resistant quartz tubes, ⅜ inch in diameter and 10 inches long. The constancy of light output is the result of an "iodine cycle" in which, as the tungsten filament evaporates, iodine vapor continuously carries back to the filament the tungsten particles which otherwise would blacken the wall of the tube.

Notable outdoor floodlighting installations employing G.E.'s Quartzline lamps during the past summer included a dog race track near Boston and a golf course in North Carolina. The lamps also are used for the exterior floodlighting of buildings. ◄◄

Planned Street Lighting in Grand Rapids

By **B. J. KEMPKER***
Electrical Engineer

Every year the Department of Water & Light submits a budget to the city's Manager and Commissioners. Capital or first cost monies have been made available every year in amounts of from $50,000 to $350,000 annually. Adequate street lighting levels (I.E.S.—A.S.A. Street and Highway Lighting) should be the aim of all progressive municipalities and it has been our aim since 1953. Here is the status in Grand Rapids:

	Existing Conditions	I.E.S.-A.S.A. Required
Miles of arterial streets	**144.8**	
Number of lighting units	**2,048**	**8,000**
Miles of non-arterial streets	**287.3**	
Number of lighting units	**3,400**	**10,000**

Grand Rapids, Mich., meets 30% of the I.E.S.-A.S.A. lighting level standards. In the business area we have 1,279 incandescent units on concrete and steel poles, 10,000- and 6,000-lumen lamps, 120/240 volts. We also have 769 fluorescent units on concrete and aluminum poles, 21,000-lumen (4- to 6-foot lamps).

In the residential area streets we have 3,400 incandescent units on wood and steel poles, 4,000-lumen lamps, 6.6 and 15 ampere.

Street-lighting capital construction in 1960 installed 28 fluorescent luminaires on concrete poles; ten incandescent luminaires on concrete poles, aerial system, and 500 residential replacements (existing open lamps, 4,000-lumen incandescent type to be replaced with refractory-glassware enclosed units).

Street-lighting capital construction after 1960 to 1970 will be as shown below:

Expressway—Grand Rapids is participating with the state and federal governments in the installation of north-south and east-west expressways, through the city. The expressway will utilize concrete poles, mercury luminaires at 32-foot mounting height and underground 240/480-volt systems on throughways. The expressway will further utilize concrete poles, fluores-

(Continued on page 138)

* The author is in the Division of Municipal Water and Light, Grand Rapids, Mich.

(Continued from page 137)

cent luminaires at 25-foot mounting height and underground 240/480-volt systems on the overpasses, exit and entrance ramps. Lighting will meet the I.E.S.-A.S.A. minimum requirements. Even with the utilization of the more efficient light sources on this project, we anticipate a 100% increase in the city's street-lighting power requirements.

Urban Renewal—Grand Rapids has received an urban-renewal grant for a blight area. This area is to be cleared and revitalized into an attractive industrial area. Preliminary proposals have been forwarded by the Department of Water and Light for the relighting.

The City of Grand Rapids employs a purchasing agent, and the bulk of all electrical materials are competitively purchased under written specification (prepared by the department wishing to purchase the material). Any manufacturer or wholesaler, wishing to meet "Approved Equal" to the city's specification standards, may apply. At least 40 manufacturers are on our list.

Grand Rapids in 1958 employed consultants to study street-lighting conditions within Grand Rapids, East Grand Rapids, Grandville, Wyoming Township, Walker Township, Paris Township, Plainfield Township and Grand Rapids Township. The following table should be of interest to AMERICAN CITY readers:

	Population	Lights per mile	Total no. of units	Total lumens emanated
Grand Rapids	189,172	13.1	5366	25,109,000
East Grand Rapids	9,345	8.5	368	1,821,500
Grandville	2,891	8.45	360	1,348,000
Wyoming Township	40,871	9.94	1740	5,720,000
Walker Township	13,640	3.08	391	1,627,500
Paris Township	12,573	5.95	654	2,394,500
Plainfield Township	9,225	.65	75	272,000
Grand Rapids Township	13,216	3.41	368	1,132,000

Financing street lighting also varied with the governmental units. In Grand Rapids, East Grand Rapids, Grandville, Wyoming Township and Paris Township the cost of street lighting is shared by the entire group of taxable property owners. In Walker Township, Plainfield Township and Grand Rapids Township the cost of street lighting is raised by special assessment districts. Thus, property owners who do not own property within the district, do not share in the street-lighting costs. ◄◄

Buffalo Tests Plastic Conduit

In Buffalo, N. Y., the Niagara Mohawk Power Corporation has been experimenting with underground plastic conduit to serve a multiple street-lighting installation. The plastic conduit carries multiple circuits taken from a 120-volt source. This type of circuit is commonly used today instead of series circuits for street lighting.

The conduit for the series-circuit lighting was 2½-inch and 2-inch fiber duct, and was, in some areas, encased in a two-inch concrete cover. The plastic pipe, a portion of which is Republic Steel Corporation's SRK (semi-rigid A.B.S.), is 1¼ inches in diameter and is installed without a concrete cover in front and side yards. (1¼-inch steel conduit is used under driveways and pavement.)

For the multiple circuits, it was necessary to run conduit from poles in the rear yard to the light standards at the curbsides of the two streets paralleling the poles. The use of plastic conduit lent itself to the electrical utility's efforts to keep the trenches narrow and excavation noise and rubble at a minimum.

The conduit is laid 18 inches below ground. The plastic pipe used in this installation is corrosion-resistant; its black pigment is said to afford high resistance to the effects of ultra-violet rays where exposed to the sun. The product is light, easy to handle and cut, and can be jointed by solvent welding. The pipe is made from a blend of styreneacrylonitrile copolymer and nitrile rubber.

Officials of Niagara Mohawk, report that the installation is part of an experimental program it has been conducting with plastic conduit for several years. ◄◄

Workmen place a length of plastic-pipe conduit as part of a multiple street lighting project in Buffalo, N. Y.

ADDED BEAUTY FOR LOCATIONS like this. The Styled Mercury unit directs the light downwards and eliminates glare. It illuminates 11,000 square feet to 3 footcandles. You need fewer and shorter poles, and less wiring, to get the desired level of light.

ANOTHER IN THE FAMILY of modern Styled Mercury luminaires. The entire line is all-aluminum, with Holophane® refractor. Choice of 1000, 700 or 400 watt ratings. Available in choice of brushed aluminum finish or five decorator colors.

FOUR OF THE LATEST design units provide excellent nighttime illumination for traffic and pedestrians on this busy street in a shopping section.

L-M Announces Another Graceful Design In The New Styled Mercury Light Family

Line Material's Styled Mercury luminaires are a family of high quality, high intensity lighting units. The latest addition to the Styled Mercury line is the upsweep design installed in the well-lighted street shown above.

These are large, handsome luminaires, styled for Line Material by a noted industrial designer. They will contribute daytime beauty and excellent nighttime lighting to any street, park, mall, public square, or parking area.

Line Material is a leading manufacturer of outdoor lighting with 50 years' experience in the design and application of street and highway luminaires. L-M also provides competent Lighting Application Service by experienced lighting engineers.

MAIL COUPON FOR BULLETINS

Ask the L-M Lighting Engineer or Field Engineer for bulletins, or mail the coupon.

OUR 50TH YEAR 1911 — 1961

LINE MATERIAL® Industries

McGRAW-EDISON COMPANY

Outdoor Lighting

McGRAW EDISON

522

DISTRIBUTION TRANSFORMERS • RECLOSERS, SECTIONALIZERS AND OIL SWITCHES
FUSE CUTOUTS AND FUSE LINKS • LIGHTNING ARRESTERS • POWER SWITCHING EQUIPMENT
PACKAGED SUBSTATIONS • CAPACITORS • REGULATORS • OUTDOOR LIGHTING
LINE CONSTRUCTION MATERIALS • PORCELAIN INSULATORS • FIBRE PIPE AND CONDUIT

Line Material Industries, Milwaukee 1, Wisconsin

Please send me details on L-M Styled Mercury family of luminaires and the new units. AC-91

Name_____

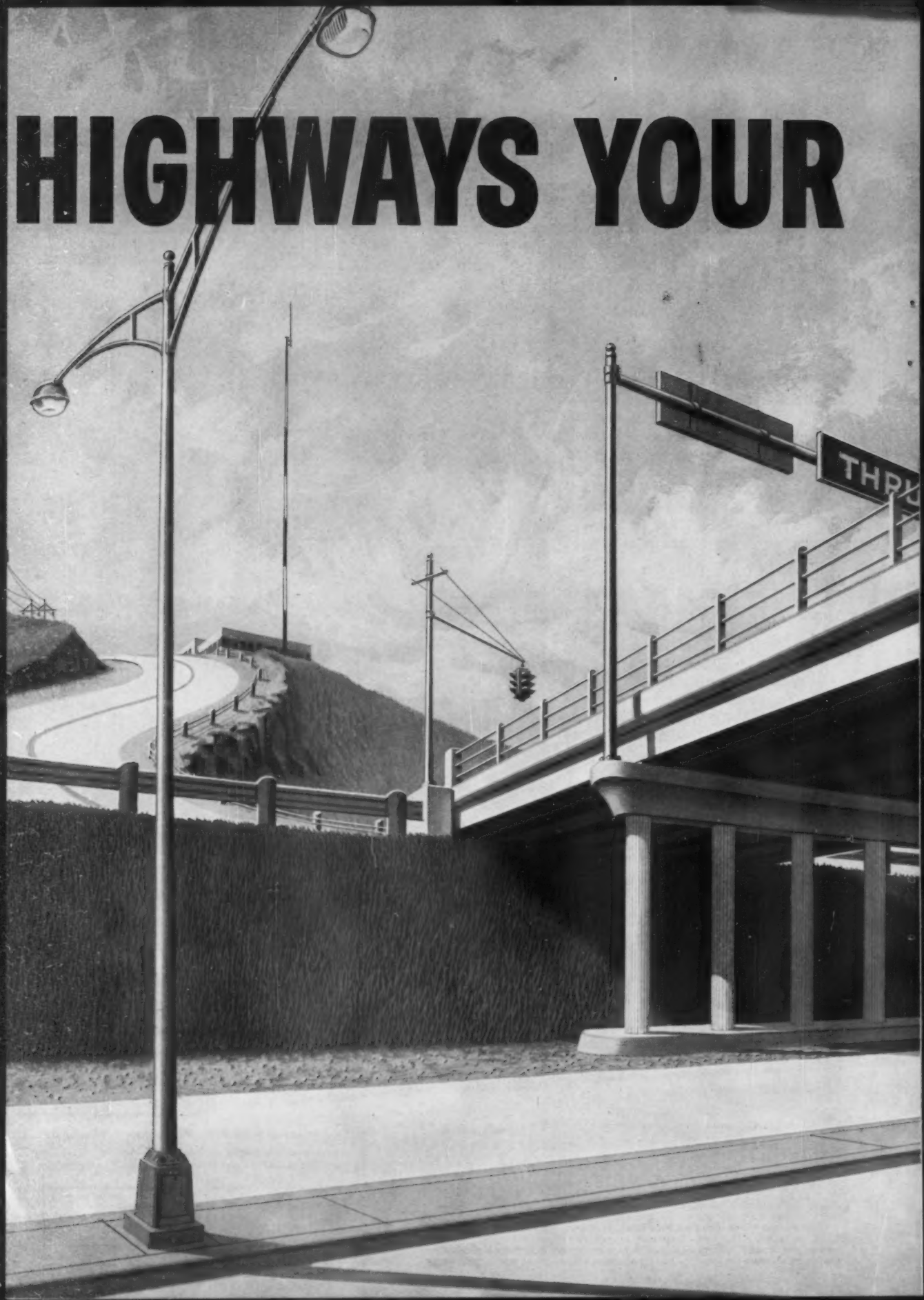
Company_____

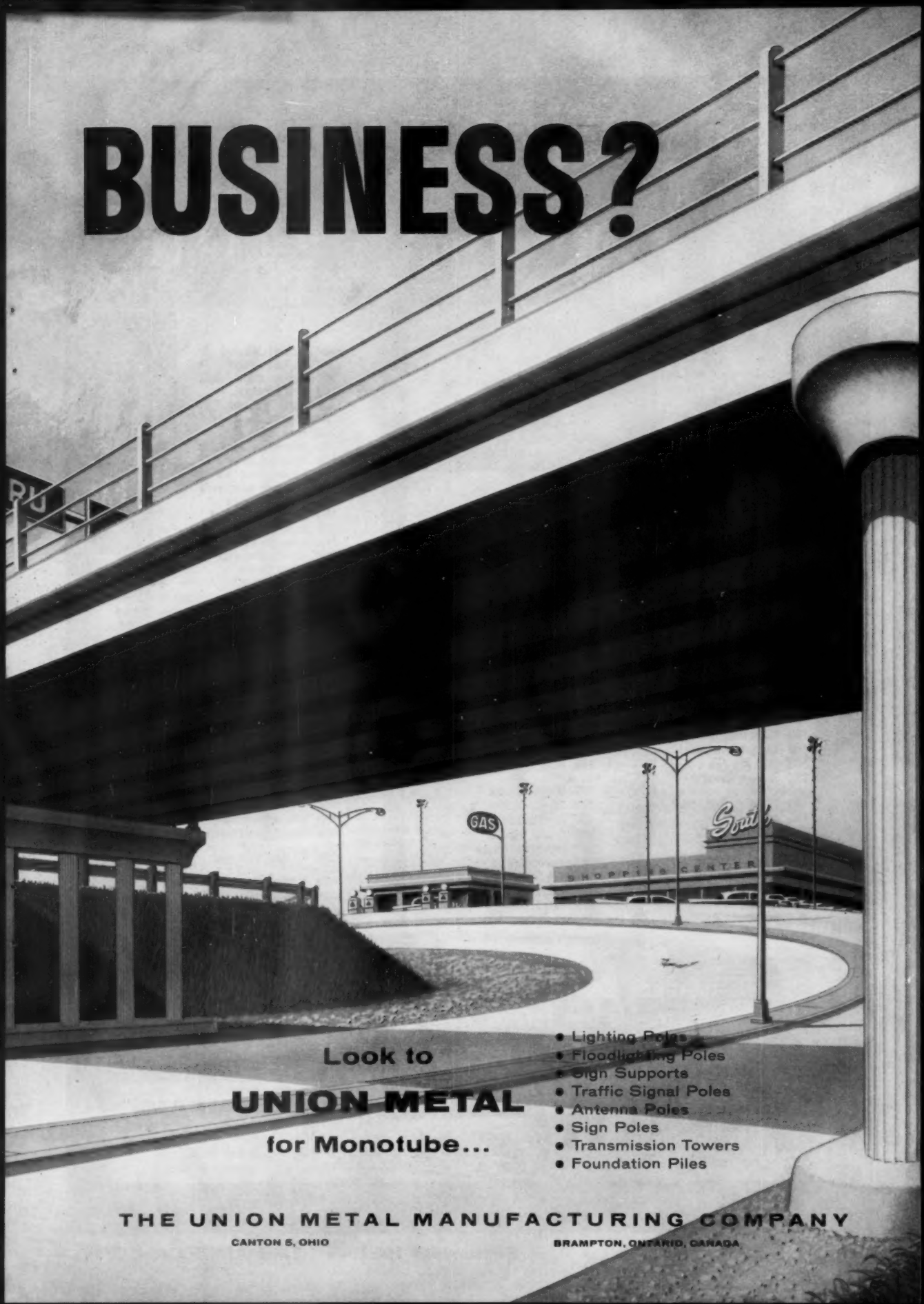
Address_____

City_____ State_____

Type of Area To Be Lighted_____

HIGHWAYS YOUR





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UNION METAL

for Monotube...

- Lighting Poles
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- Sign Poles
- Transmission Towers
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THE UNION METAL MANUFACTURING COMPANY

CANTON 5, OHIO

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CAST IRON PRESSURE PIPE
Has Served a Century or More in These 112 CITIES

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1816 Montreal, Quebec
1819 Philadelphia, Pennsylvania
1824 New York, New York
1826 Winchester, Virginia
1827 Wilmington, Delaware
1829 Columbia, Pennsylvania
1830 Detroit, Michigan
1830 Lynchburg, Virginia
1830 Mobile, Alabama
1830 Richmond, Virginia
1831 Baltimore, Maryland
1831 St. Louis, Missouri
1832 Nashville, Tennessee
1834 Pottsville, Pennsylvania
1834 Reading, Pennsylvania
1834 Wheeling, West Virginia
1835 Lancaster, Pennsylvania
1836 Huntsville, Alabama
1840 York, Pennsylvania
1842 Winston-Salem, N. C.
1844 Frederick, Maryland
1844 St. John, New Brunswick
Prior to
1845 Troy, New York
1845 Zanesville, Ohio
1846 Halifax, Nova Scotia
1847 Boston, Massachusetts
1847 Mount Holly, New Jersey
1849 Hartford, Connecticut
1849 Utica, New York
1850 Honolulu, Hawaii
Prior to
1850 Pittsburgh, Pennsylvania
1851 Albany, New York
1851 Alexandria, Virginia
1852 Buffalo, New York
1853 Chicago, Illinois
1852 Syracuse, New York
1854 Nashua, New Hampshire
1854 Newburgh, New York
1854 Northampton, Pa.

Prior to
1854 Sacramento, California
Prior to
1855 Cambridge, Massachusetts
1855 Minersville, Pennsylvania
1855 Williamsport, Pa.
1856 Cleveland, Ohio
1856 Petersburg, Virginia
1858 Washington, D. C.
1859 San Francisco, California

GAS UTILITIES

1816 Baltimore, Maryland
1823 Boston, Massachusetts
1830 Fredericksburg, Virginia
1832 Mobile, Alabama
1835 New Orleans, Louisiana
1835 Philadelphia, Pennsylvania
1838 Charleston, S. Carolina
1839 Louisville, Kentucky
1842 Toronto, Ontario
1845 Cincinnati, Ohio
1845 Painesville, Ohio
1848 Newark, New Jersey
1847 New Haven, Connecticut
1847 Fall River, Massachusetts
1847 Quebec, Quebec
1848 Savannah, Georgia
1849 Hartford, Connecticut
Prior to
1849 Montreal, Quebec
1850 Salem, Massachusetts
1851 Bridgeport, Connecticut
1851 Chicago, Illinois
1851 Indianapolis, Indiana
1851 Madison, Indiana
1851 New Brunswick, N. J.
1851 Richmond, Virginia
1852 Bangor, Maine
1852 Bound Brook, New Jersey

1852 Frederick, Maryland
1852 Norristown, Pennsylvania
1852 Providence, Rhode Island
1852 West Chester, Pa.
1853 Detroit, Michigan
1853 Elizabeth, New Jersey
1853 Peoria, Illinois
1853 Plymouth, Massachusetts
1853 Springfield, Illinois
1853 Rochester, New York
1854 Bethlehem, Pennsylvania
1854 Evansville, Indiana
1854 Hagerstown, Maryland
1854 Knoxville, Tennessee
1854 Nantucket, Massachusetts
1854 Norwich, Connecticut
1855 Atlanta, Georgia
1855 Ottawa, Ontario
1855 Sandusky, Ohio
1856 Adrain, Michigan
1856 Catasauqua, Pennsylvania
1856 Chambersburg, Pa.
1856 Media, Pennsylvania
1857 Alton, Illinois
Prior to
1857 Carlisle, Pennsylvania
1857 Charlottesville, Virginia
Prior to
1857 Harrisburg, Pennsylvania
1857 Huntingdon, Pennsylvania
1857 Lambertville, New Jersey
Prior to
1857 New York, New York
Prior to
1857 Poughkeepsie, New York
1858 Natchez, Mississippi
1858 Raleigh, North Carolina
Prior to
1858 Vicksburg, Mississippi
Prior to
1858 Washington, D. C.
1859 Hannibal, Missouri
Prior to
1859 Lewisburg, Pennsylvania

No substitute pipe has ever matched this record of long-lived, trouble-free service. Keep this in mind when you select pipe for your water mains or gas lines.

This advertisement is published in the interests of the Cast Iron Pressure Pipe Industry by .....

WOODWARD IRON COMPANY
Since 1882
WOODWARD, ALABAMA

Six-foot, six-lamp fluorescents in Minneapolis provide . . .

Four Footcandles Downtown

American Public Works Association members visiting Minneapolis, Minn., during the organization's annual Congress, September 24-27, will see a prime example of progressive downtown fluorescent street lighting.

Minneapolis, one of the nation's top users of fluorescent street lighting, has some 4,500 units mounted throughout the city. Its main "whiteway" is a high-level stretch, Nicollet Avenue, whose six-foot, six-lamp General Electric luminaires bathe the roadway in a four-footcandle trough of glare-free luminescence.

About 80 of the big units, equipped with power-groove lamps and heat exchangers, line the modern retail street. The luminaires are mounted at 33 feet on poles spaced 45 feet apart in a staggered arrangement.

By the end of next year, Minneapolis city officials plan to have more than 100 of the Type 606 units installed along the thoroughfare. The new lighting installation has been greeted with satisfaction by the Minneapolis residents—"nothing but compliments," a spokesman said.

The fixtures and poles are owned by the city and power is supplied by the Northern States Power Company. ◄◄

Auto Accidents Quadruple at Night

Studies of accident frequency, says the Illinois Division of Highways, show that the night-time ratio of accidents per vehicle-mile is three to four times that of daytime experience. This situation has been recognized by traffic-safety officials in the fields of engineering, enforcement and education. Legislation has been enacted that has resulted in various changes in the application of highway safety as it applies to night-time traffic.

Engineers employ traffic signs and markings more frequently than any other device to regulate, guide or warn drivers. The characteristics of a sign or marking must depend on its attention-compelling value by its very size, placement, contrast and shape during daylight as well as to the maximum extent during darkness. The principles of reflectorization are employed on signs, delineators, bridge railings, curbs, culvert headwalls, and on other fixed objects of engineering construction on right-of-ways. The use of reflectorized pavement markings is recognized as having its value especially during darkness in the edge-lining and center-lining of paved surfaces.

The direct flood illumination of roadways is a method intended to reduce the hazards of night-time driving. Lighting in addition can be used to illuminate signals or signs to decrease hazards during darkness.

The proper type and placement of lights on the many types of vehicles on streets and highways and their proper functioning should be checked by officers to assure that legal requirements are met. Such would include clearance and sidemarkers on commercial vehicles, tail-lights, stop-lights, head-lamps within a specified range of intensity and alignment and directional indicator signal lamps. The proper lighting systems on bicycles and farm equipment being used during darkness must be provided and maintained in good working order.

Safety education of the pedestrian and driver alike can do much toward reducing the night-time ratio of accidents per vehicle-mile as contrasted to the daytime ratio.

Rural Accidents

In a study of night-time accidents in 1959 with respect to the critical periods of time for night accidents, rural fatal night accidents were found to occur with excessive frequency during the months of January, March and December. The days of the week which had more than their share of rural night fatal accidents were Friday, Saturday and Sunday. Critical hours of the day for the accidents were very early morning hours and a period from 4:00 to 6:00 p.m. Two-thirds of all fatal accidents in darkness took place in rural territory. ◄◄

West Hartford Wins Improved Fire Rating

West Hartford, Conn., has been able to advance its fire rating two notches in the strict New England Fire Insurance Rating Association. According to Town Manager Donald H. Blatt, a recent survey by the Association has lifted the town's rating from fifth to third class. This will result in substantial reductions in insurance costs.

The Association's field surveyors made on-the-spot tests of many fire department functions. These included the training program, the field experience of the men, and inspection of properties, fire-prevention activities, and the manner in which the town fire stations and apparatus were maintained.

The most significant improvement noted was the installation of the new telephone fire-alarm system. This now includes 87 alarm boxes for fire, police and other emergencies, and the installation of an advanced type of emergency board. This is one of the first such installations in the New England area. In addition, the system has alarm boxes in 29 factories, schools and public buildings directly connected with the alarm headquarters. The town also has 17 Gamewell, telegraphic alarms tied into the Hartford system.

Improvements in fire hydrants also helped bring about the advance. West Hartford receives water from the Metropolitan District of Hartford, an inter-municipal organization that serves seven municipalities (see THE AMERICAN CITY, November 1960, p. 169). The district's water bureau has installed 115 new Mueller and Kennedy hydrants, each protected with a six-inch gate valve, and has replaced many obsolescent ones. This brings the total number of hydrants to 1,023, locating one within 500 feet of any dwelling in the town.

In several areas, the town has extended streets to permit the Metropolitan District to extend its water lines into new areas and to improve pressure in others. A new pumping station, plus a new Preload 500,000-gallon prestressed-concrete reservoir, helped advance the rating.

Improvements in the fire department itself also were of assistance. Last year, the department added two new pumpers, and instituted a vigorous training program for the 84-man force. One is a Maxim, 750-gpm class A pumper with a two-stage Hale centrifugal pump powered by a 250-hp Waukesha engine. The other is a Ward La France, 750-gpm class A pumper with a two-stage Waterous pump powered by a 300-hp Waukesha engine. Both have the cab over the engine to reduce the length of the wheelbase, power steering and air brakes. Voters also approved a new fire station, to be built this year.

Mr. Blatt reports that indirect savings for the taxpayers through lowered premiums on town-insured properties would be substantial. More than two-thirds of the town-owned buildings will get the benefit of rate reductions. ◄◄

Town Manager Donald Blatt (left) tests the new telephone fire alarm with Fire Chief John O'Laughlin and Police Chief Vincent Hurlbut (right).

A Diesel Powered Pumper

East McKeesport, Pa., has the distinction of owning the first diesel-equipped fire-apparatus unit delivered in this country by a manufacturer who builds his own diesel engines.

The unit is a Mack B85 750-gpm pumper equipped with the Mack diesel engine that develops 230 hp at 2,300 rpm. It is owned by the Sunset Volunteer Fire Company. It contains a 500-gallon booster tank; rear-mounted electric hose reel, removable deck-mounted deluge gun and air brakes.

Three units were delivered last year to Hamilton, Bermuda, with the same engine. ◄◄

East McKeesport's new 750-gpm diesel-powered pumper.

The facts about transistorized 2-way radio

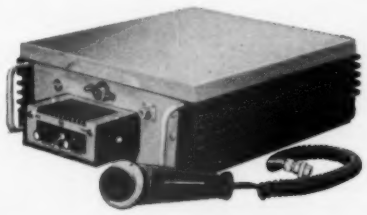
(FROM THE LEADER IN RADIO—RCA)

If you're cautious about specifying transistorized 2-way radio for your business . . . if you don't have full facts on the newest developments in radio communications equipment . . . you'll want to read this "Best Seller" by RCA. It's a fact-filled booklet that delves inside the "LD" (Low battery Drain) Mobile Radio; shows you why the "LD" gives you all the advantages of transistorization at a price comparable to all-tube equipment. Transistorized—yet easily serviced. Miserly in power consumption—yet generous in performance.

Check These Important Sections:

- How 2-Way Radio Finds "Hidden" Profits
- Inside Story on the "LD"
- Why Transistors?
- Nationwide Servicing

Read all about 2-way radio. You'll see why the new "LD" is today's best buy! Send coupon for your copy of this informative booklet.



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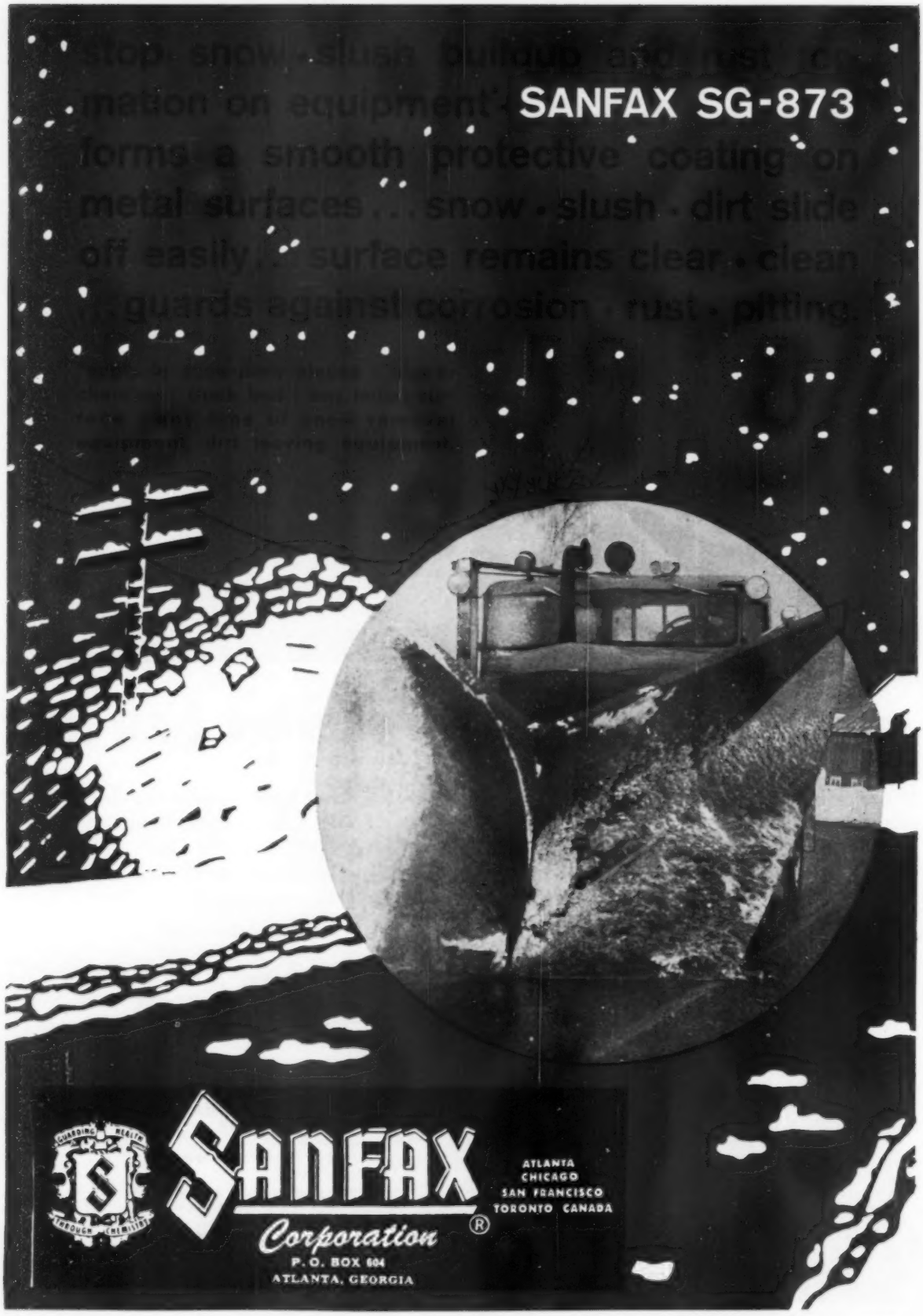
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The City Tells Its Story

Edited by PAN DODD EIMON

Municipal Public Relations

City-Created Citizen Committees Prove Best MPR for Modesto

Citizen committees are the "most consistently effective public-relations effort" in Modesto, Calif., according to City Manager Ross Miller.

"We have found such committees invaluable," Manager Miller reports, "not only in 'spreading the base' of planning for municipal projects but in keeping individual citizens and groups informed of community needs and possible solutions. They are most effective when serving for a special period or for a specific assignment."

For instance, a 16-member citizen committee is currently meeting twice a month to review Modesto's ten-year-old charter. By September 1962, it must submit recommendations for changes to the City Council for a subsequent referendum.

This Citizens' Charter Review Committee began with a talk by Mayor Don Hammond. The mayor pointed with pride to accomplishments in the last decade, listed "still badly needed items," then said, "As we look forward to tackling these problems, we need to weigh again their relative values and urgency. And we need to recognize again the triple obligation of the city: to provide facilities and services the city needs; to provide them within the limits of what people are willing to pay; to provide them on an efficient and economical basis."

Then Mayor Hammond pushed forward the key suggestion. "To help us weigh these responsibilities and make the proper determinations, I believe we need to draw heavily upon citizen assistance—to avail ourselves of the strength and wisdom and community understanding of the people of Modesto. . . . Right now, besides the members who serve year round on city boards and commissions, citizens' groups are actively at work on problems of sidewalks, zoning, and subdivisions. Other such groups are currently being organized to help work out improvements to the downtown business district and to Yosemite Boulevard. Modesto has gained a national recognition in the field of citizen interest and participation, and with the help of many citizen groups has established a notable record for sound, efficient government. We need to use to the fullest extent our 'natural wealth' of individual willingness to serve."

Modesto taps its wealth of informed citizens for hard jobs; this committee has been appointed by the city to recommend charter revisions. It has until September 1962 to complete its work.

Modesto's council reacted promptly and enthusiastically to the mayor's suggestion, as minutes of the meeting reveal. The city attorney recommended that a citizens' committee be appointed to make a general review of the charter, to hold public meetings, and to give the fullest opportunity for community presentation of ideas and suggestions.

Then a council member "further suggested that the citizens committee be appointed by the mayor to work on the whole field of future development of the city. This would enable the council to know what the people of the community want, and would also serve to inform the public of existing problems." A motion to this effect was unanimously approved.

Unique for some cities, the setting up of a citizen committee to handle this difficult job is the "usual method" in Modesto. Since 1951 (with adoption of a council-manager form of government), two dozen major committees, and scores of others, have earned Modesto a reputation as a progressive, well-governed city.

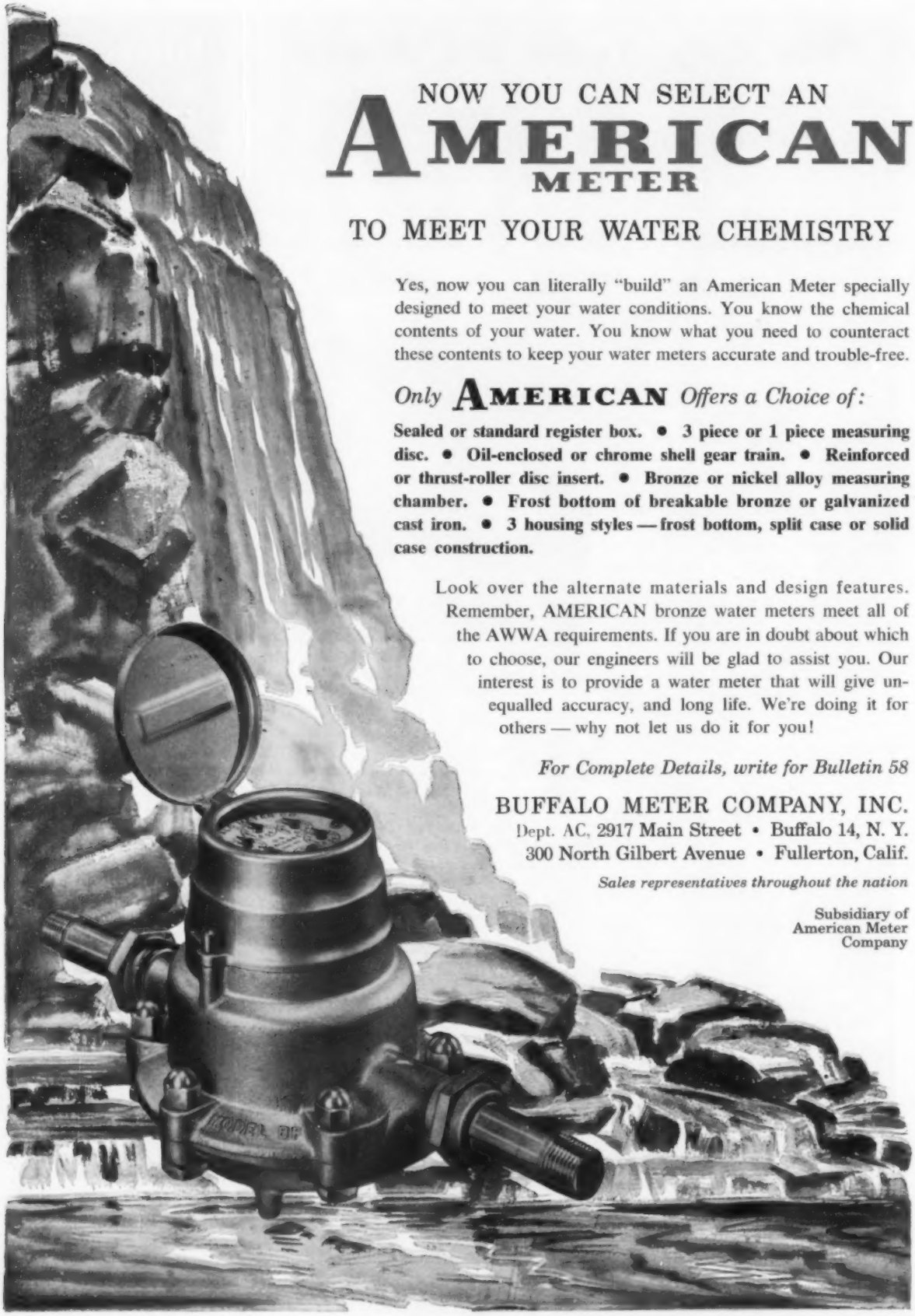
(Continued on page 149)

Golden Anniversary Aid

The Township of Hillside, N. J., wants ideas on celebrating its 50th anniversary in 1963.

The Township asks other municipalities which have observed successfully Golden Anniversaries to contact it directly and to send their programs or any other assistance that may help the Hillside Committee.

Please send the material to Henry Goldhor, Town Attorney, Town Hall, Hillside, N. J.



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(Continued from page 147)

The U. S. Department of State sends top foreign officials to Modesto to see how democracy works. In 1955, Modesto won the coveted All-American City Award for "the outstanding spirit and vigor with which Modesto citizens tackled their problems and worked together toward solutions."

Standing modestly in the background is the city government. It has provided the channels:

to inform its people,
to arouse and capture their interest,
to give them significant jobs to do.

City officials readily rate the citizen spirit as the community's "finest natural resource."

Modesto keeps people informed in these ways. Citizens are invited repeatedly and consistently to attend council meetings which are scheduled twice monthly in the late afternoon, twice monthly in the evening to enable people, whatever their work hours, to come to council some time during each month.

Each of the city's three radio stations carries a weekly city radio program—KBEE on Saturday morning, KTRB and KFVI on Sunday evening at different hours. The city issues excellent annual and periodic reports and works at providing adequate, factual information for the press.

Suggestion forms are printed and distributed frequently and in many different ways. Citizen ideas are invited. This past year, a citizens seminar was held for city officials to listen to, talk about, and answer citizen questions about any and all phases of municipal operations. It was so well attended that more seminars are planned.

An annual "Youth in Government Day," during which high schoolers take over city jobs, interests and instructs young people in their local government.

The city has given hundreds of citizens responsible posts on city boards and commissions. In addition, citizens have served or are currently working on a great variety of special committees.

And then, there's the Charter Review Committee, mentioned earlier, to examine the old charter and to ready recommendations for a citizen referendum in November 1962, and for the California legislature in January 1963.

The chairman of the group, Lee Davies, told committee members that there was a final job the committee would then have to do, "Support any revisions approved by the council and submitted to the electorate by informing citizens as to the need and purpose of suggested amendments." Modesto's citizen committees do not leave their jobs half-done. Mr. Davies pointed out, "the job of educating the voters is equally as important as the job of determining desirable amendments."

As for this latest Modesto citizen committee—and the difficult, time-consuming, and tremendously important job it is doing for the city—Mayor Don Hammond can well apply the words of his predecessor, former Mayor Harry Marks.

"An outstanding feature of the community has been the citizen interest and participation in city government . . . " Good government is hard to achieve—easy to lose. Citizen understanding and support are needed day after day after day to assure good government. This pattern of participation is established in Modesto, and with continuing citizen interest and action there is no limit to what we can achieve." ◄◄

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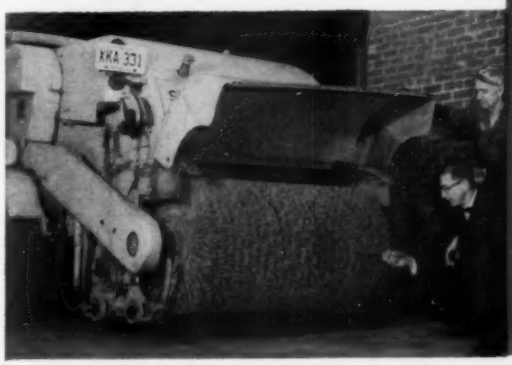

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J. Harold Grady, Mayor of Baltimore, places the first call from the new communications center operated by the Transit and Traffic Department.

A Third Two-Way Radio System

By **HENRY A. BARNES**, Commissioner of Transit & Traffic
Baltimore, Maryland

A Police Department is an extremely busy agency concerned primarily with the suppression of crime. If the dispatcher in the police radio room received a call that a man was chasing his wife with a gun and, at the same time, received a call that a red traffic-signal light was out, he would, of course, completely disregard the last call and take care of the one involving the crime. This would be the natural thing to do. However, in the case of the man with the gun, his wife (if he were a good shot) would be the only casualty until the state took care of him later. In the case of the red light, not one, but perhaps eight or ten people, could have been seriously injured or killed. Of course, such an incident would have been unfortunate. but would not have been considered a crime.

Communications and surveillance of traffic as part of a Traffic Engineering Department's normal function has been too largely ignored. At none of our engineering schools are students informed as to the use of communication systems. Neither are they informed that it is necessary for the traffic engineer to know what is going on throughout the city. The usual procedure is to wait until a complaint has been registered and then see what can be done about it.

The importance of having information concerning traffic conditions, first became apparent while I was at Denver when we had to handle large crowds at the Denver Post's annual opera. We found that it was extremely helpful to place radio cars in the field to report through the police communications center what was going on.

In Baltimore, the need was apparent from the first. At first a small system was created using a 20-watt base station and twelve 15-watt two-way car radios. These were placed only in the supervisors' vehicles and in the emergency electrical trucks. Within a few months after its installation, the benefits of such a system were so apparent that plans were made immediately to add to the system. Today the Department of Transit & Traffic operates 76 vehicles—equipped with General Electric 450-megacycle 2-way radio.

The city found out that during

(Continued on page 152)

(Continued from page 151)

severe storms other departments were without communication and equipment often was lost for hours at a time because there was no way of knowing where the crews were working. As a result, the Bureau of Highways asked permission to install six radios in their supervisors' cars on our department's system. Later 15 more were added and today they operate about 65 two-way units. In addition, the Bureau of Sanitation, the Mechanical-Electrical Bureau which maintains street-lighting equipment, the Board of Education, the Bureau of Sewers, and the building inspectors also have two-way radios in their vehicles and use our frequencies. This system is entirely separate from those operated by the Police and Fire Departments, and except for one small system operated by the Bureau of Water Supply, we furnish all communication for the city, except police and fire departments.

Today our system consists of three 250-watt base stations, which can be operated as radio repeaters so drivers can talk from their cars to the base station or car to car, and about 170 vehicles with two-way radios. Three channels are available — one being normally for use by the Department of Transit and Traffic, but with a second channel which can be used in case of transmitter failure on the Bureau of Highways frequency. The Bureau of Highways normally works on its own frequency, but, again, in case of emergency they can operate on the frequency of Transit & Traffic. A service channel is established which is generally used by the Bureau of Sanitation, Bureau of Sewers and the others I have mentioned, but, in emergencies, they can use the Highways channel. This system is expected to grow during the next two or three years to include 300 vehicles.

Benefits

Today instead of having to rely on either the public or the Police Department to call in malfunctioning signals, damaged signs, etc., more often than not these calls are now received from vehicles operating on one of our three frequencies. During morning and evening peak hours, 25 vehicles manned by employees of our department patrol the arterial thoroughfares. Their job is not to enforce the law or to attempt to direct traffic but to keep us advised on traffic conditions throughout the city. In addition, we have first-hand information concerning illegally parked vehicles, malfunctioning signals and damaged signs. Actually we have 25 pairs of eyes in our own department alone and nearly 170 pairs (one for every 7,000 inhabitants) looking over the entire city to keep us advised of conditions during our roughest periods.

Through the use of private ringing direct telephone lines to such agencies as the police radio room, the police call box system, the city Bureau of Highways, the Fire Department, the gas and electric company, our two shops, the State Roads Commission Radio Room, the Baltimore Transit Company, and the County Emergency Medical Service, we route calls for assistance to the proper department without any delay.

During emergencies this entire system becomes even more important because all recovery procedures are coordinated within our office. Most of the burden falls on the city's Bureau of Highways which has

(Continued on page 155)

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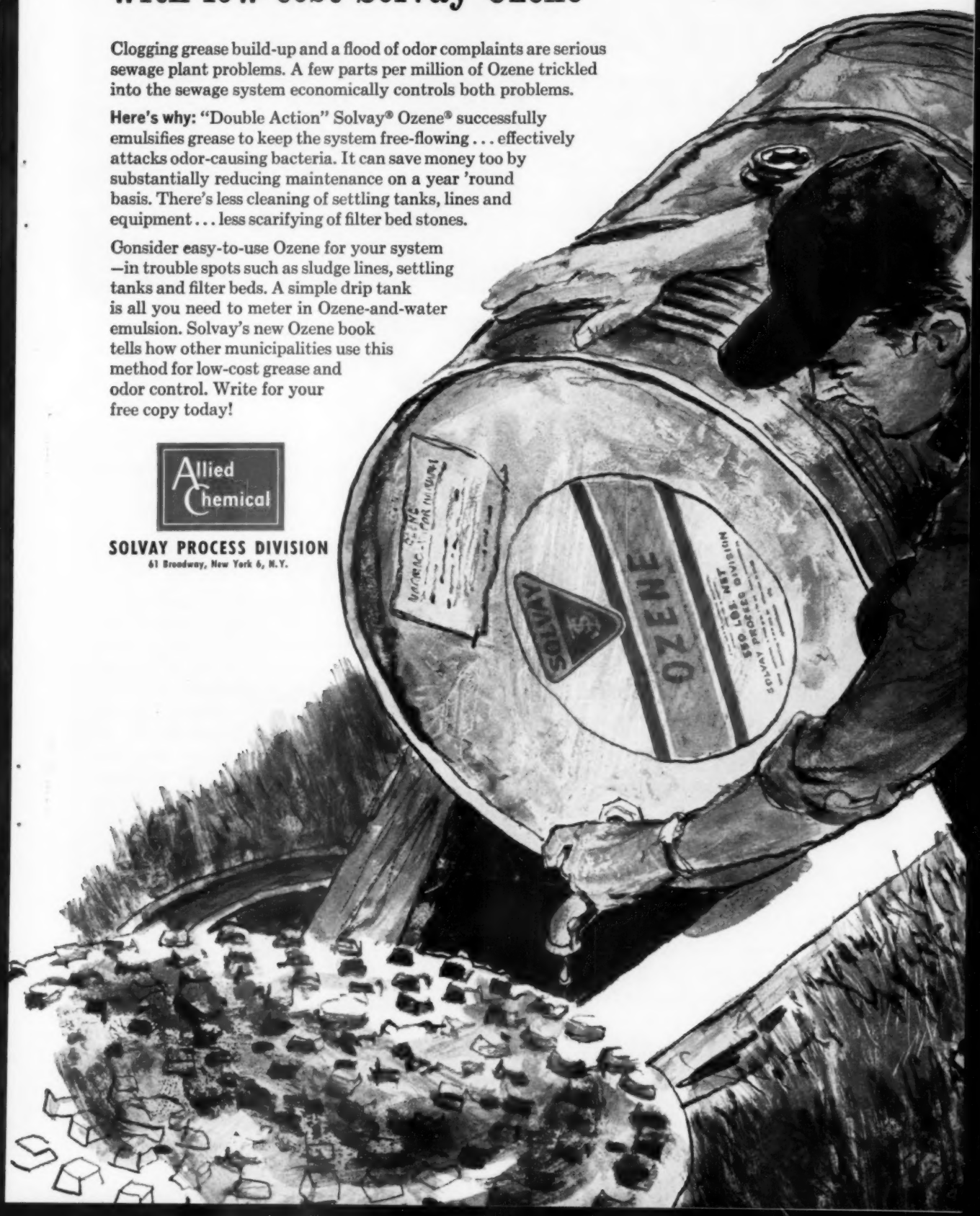

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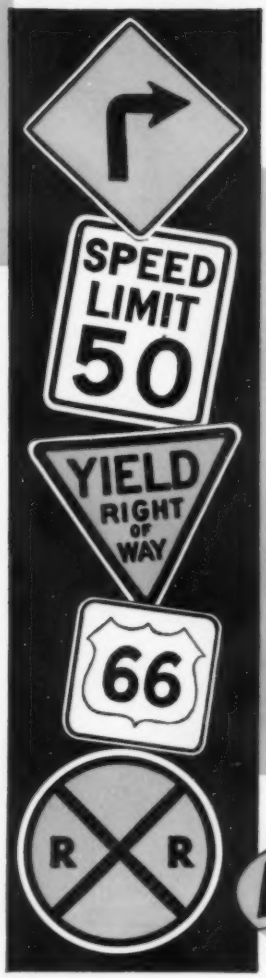

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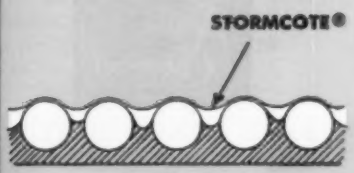

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(Continued from page 152)

charge of equipment operated by all other bureaus except Police, Fire and Transit & Traffic. By being able to apprise these agencies of the need for recovery equipment, it can be dispatched immediately.

Even during normal periods, without radio, my department alone would require one-half as much again as much mobile equipment and personnel. This would raise the cost of operations more than one million dollars a year.

When the system was first considered, other agencies were extremely reluctant to participate feeling that it would be a case of spying on the personnel and activities. Now the demand for additions has been greater than our ability to provide. Our department is an "around-the-clock" operation seven days a week. By simply adding a couple of extra men during the busy periods, a single operator can take care of the entire system during the balance of the time. This too, has proved a great economy to the city because if each agency was required to use its own personnel, 40 or 50 employees would be required while our system operates with only six. ◄◄

Los Altos Learns What the People Want

Los Altans disclosed what they wanted from their community in an opinion survey prepared by Foothill College, in cooperation with the City Council and the Chamber of Commerce.

The survey, directed by Dr. Robert J. Thompson, gave insight into the shopping practices of the residents, their viewpoint on the adequacy of school and municipal services, and their preferences for additional recreation services.

As a statistical problem for college business classes, a random sample of 10% of the 9,000 residences was obtained by telephone interviews, direct-mail questionnaires, and door-to-door interviews.

In general, the survey showed satisfaction with parking facilities, business hours, accessibility and service. There was some concern with the variety of selections, prices and adequacy of outdoor lighting. A neighborhood shopping center on the immediate outskirts of the city received particularly high rating, prompting further study of its merchandising techniques.

The importance of adequate parking is underscored by two other factors: First, 69% of the respondents showed no interest in expanded bus service. Second, an expressway will skirt four shopping centers, stimulating business but generating new traffic and parking problems.

The community-opinion survey showed majority interest in shopping at night, with stores opening at noon on night-shopping days.

As for community services, replies generally rated both school and municipal services good, but there was enough unfavorable response to prompt further study by officials.

In recreation, considerable interest was shown in golf, bowling, swimming. More parks, a golf course, additional swimming pools, children's play areas and tennis courts were in the recreational facilities called for by Los Altans. This degree of interest in recreational facilities will be studied further by city officials, because a bond issue for the acquisition of park sites was defeated two years ago.

JOHN M. R. HOPE
Chief Administrative Officer
Los Altos, Calif.

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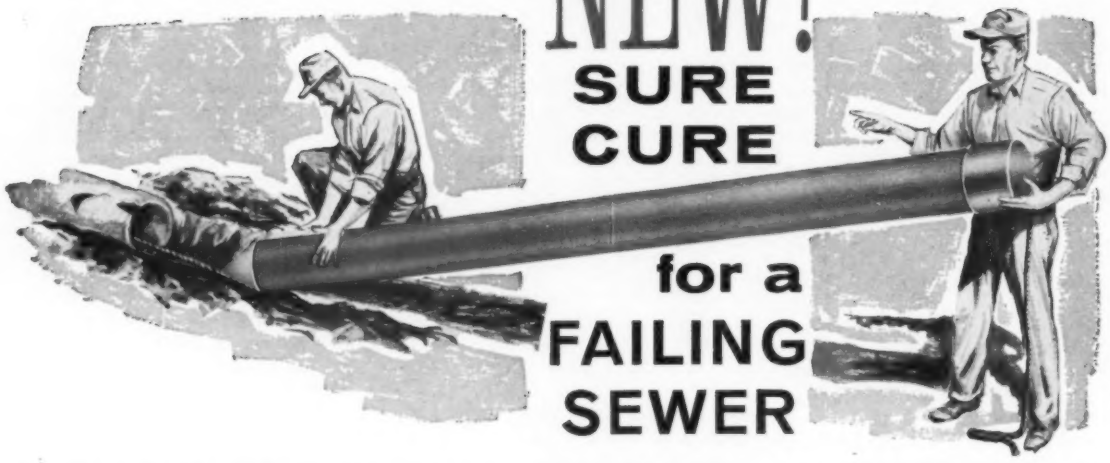

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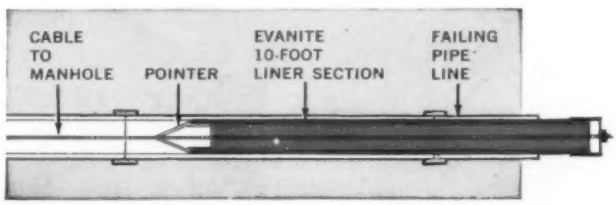

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Houma, La., Makes Its Biggest Power-Plant Enlargement

The greatest expansion of electric power generation in Houma's history is now a matter of record for the city's municipal electric plant. The enlargement placed three 5,250-hp dual-fuel diesels in operation, raising plant capacity to 25,350 hp and trimming fuel costs to a modest 2.72 mills per kwhr.

With the new prime movers, Houma has discontinued power purchases from the private power sources. The enlargement brings the total number of diesels in the plant to seven, all Nordbergs. However, the big engines dominate the picture on the basis of sheer size and power. In turning out their 53,484,000 kwhrs, the big units consumed 549,578,900 cubic feet of gas and 300,869 gallons of pilot fuel, an average of 10.27 cubic feet of gas and .00562 gallons of oil per kwhr. The gas has lower heating value of 930 BTU and the oil 137,500 BTU per gallon, so the average heat rate for these engines was a respectable 10,324 BTU per kwhr. The gas was billed to the plant at 20.5 cents per MCF and the delivered price for oil averaged 10.4 cents, giving the new engines an average fuel cost of just 2.689 mills per kwhr. The city has grown, with 25,000 population within the city limits and 40,000 in greater Houma, but this is not the biggest factor in load growth. Actually, the area served by the municipal plant cannot expand since it is surrounded by private power companies and REA cooperatives and the plant supplies about 75% of the present city area. In 1949 there were 5,000 customers and in 1960 the figure was up to a modest 6,700, most of them residential consumers. But the increase in consumption has not been modest, rising some 230% in a decade.

Much of the increase has been good solid load development but like most communities, particularly in the South, a lot can be attributed to air conditioning which makes for spectacular hot-weather peaks. Back in 1949, the peak load for the year was 4,500 kw; in the summer of 1960, it hit a towering 15,800 kw. Two years ago 22% of the customers had air conditioners but today this has risen to between 35% and 40%.

Under the leadership of Mayor Leon Gary, Houma took full advantage of its location, literally on top of a gas field, without turning the community over to the drillers. Property owners authorized the city to negotiate a community lease with an oil company calling for the drilling of directional wells from the outskirts of town to tap the natural gas under Houma's homes and streets. In return all concerned (including the city itself) receive royalties and a guaranteed low-cost gas supply. The city operates the local gas utility, selling gas to its power plant at a current price of 20.5 cents per MCF. If the price is high, the city makes more money on its gas business. If the price is low, the city makes more money on its power plant.

The Houma plant addition, housing the three new dual-fuel engines, makes an impressive appearance at night.

A big three-section induced-draft Marley cooling tower serves the new engines with a completely separate system for each engine. Each tower section has two cells, one for jacket water and lube oil and a smaller cell arranged to provide cooler water for the intercooler. For each section, a 1,200-gpm motor-driven vertical Layne centrifugal pump moves water through the big cell, the lube-oil cooler, and the jacket-water heat exchanger. A 300-gpm pump circulates water through the small cell and the intercooler. Each engine has a motor-driven pump to put jacket water through engine and exchanger.

The seven Nordberg engines have done a lot of work in the Houma plant. On August 27, 1960, the engine-hour meters on the Westinghouse switchboard showed that the 2,000-hp engines had run 71,907 hours, 71,922 hours, and 71,920 hours respectively, actually 72.8 percent of the elapsed time for the 11 years and three months they had been in service. The 3,600-hp engine had recorded 20,855 hours. The three 5,250-hp units already had run 7,221 hours, 7,220 hours, and 7,270 hours.

In the past ten years, the excess of income over expense *after* allowance for interest and depreciation has never failed to exceed a quarter-million-dollars each year. The total profit for the ten-year period was an impressive $3,129,817.20. In addition the plant donates about a million kwhrs to the sewer plant and an equal amount for street lighting.

Houma's power plant is operated under the direction of R. J. Yakupzack, Superintendent of the Light and Water Plant, assisted by Power Plant Supervisor Norris Lirette. The system functions directly under the policy supervision of Mayor Gary and the city council. ◄◄

©1961 VOLKSWAGEN OF AMERICA, INC. *SUGGESTED RETAIL PRICE EAST COAST P.O.E. $2,015 WEST COAST

What does it cost after you pay for it?

The $1,895* we charge for a Volkswagen Truck is only the beginning.

The cost goes up every time you buy gas.

Or tires. Or oil. Or parts.

But.

This isn't the only truck that runs on gas, oil and tires.

VW trucks average 24 mpg, regular gas.

In fact, some VW owners say our trucks use only half the gas their former trucks did.

Drivers doing 24,000 miles a year often tell us their VW took only $400 worth of gas.

Where their former trucks took $800.

It doesn't surprise us. The efficiency of our magnesium-aluminum engine is a legend. Almost all VW trucks get over 20 miles a gallon. Some get 30.

Our average is 24.

This is due to the elimination of dead weight. The whole truck weighs only 2,282 lbs. A loaded VW is almost as light on its feet as a conventional truck empty.

This also means less weight on tires. Most trucks in our class get about 20,000 miles on a set. We get 35,000. Sometimes 40,000.

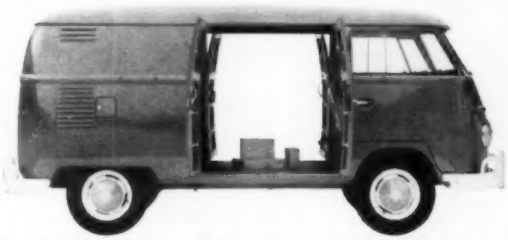
You save another $100 there. Every time around.

Volkswagen engines almost never need oil between changes. And never need anti-freeze at all. They're air-cooled. No water to freeze up in winter or boil over in July.

Service? Owners tell us they put only half the money into VWs that they put into maintaining their old trucks.

After all, we've made the same basic model for 12 years now. We've improved almost everything in it. And then improved most of the improvements.

(We try to make parts for new VWs fit old ones, too. Our spares are often better than the parts your VW came with in the first place.)



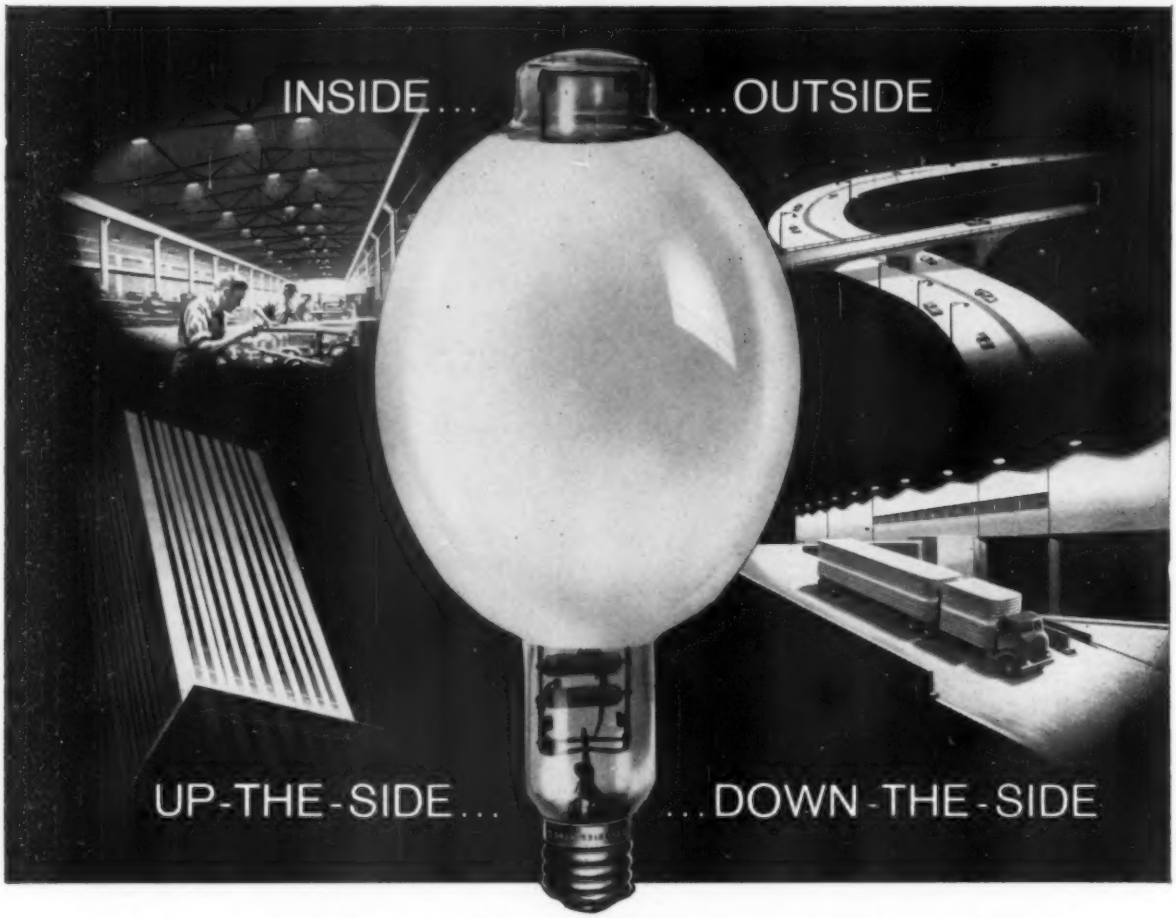
Deliver next to nothing and still make a profit.

Now then.

Taking just gas and tires, the man who saves $450 a year will save $1,350 in 3 years—the time many owners take to finance a new truck.

Does this mean the Volkswagen costs only $545?

Can that be?



Only new Sylvania Banner Mercury Lamps deliver all these advantages for indoor-outdoor lighting:

1. Longer life! Now extended to 12,000 hours. With greater maintained brightness giving a dividend of *17% more light during life* than standard mercury lamps.

2. More light! Almost triple the light of incandescents on the same power! Makes Banner Mercury Lamps ideal for street lighting, facades, industrial installations.

3. Ruggedized construction! Shocks, vibrations, fiercest weather don't stand a chance. Hard glass shell protects on the outside; welded multiple supports, springs protect on the inside, assure longer life.

4. Life recording base! Unusual feature saves time, paper work by letting you scratch installation date in numbers right on base of lamp.

5. Certified Performance Policy guarantees: "Banner Mercury Lamps may be returned to the supplier for full exchange if they fail in less than 1000 burning hours, and thereafter (up to 5000 hours) for pro-rata exchange, in accordance with a pro-rata exchange value table set forth clearly in the policy form."

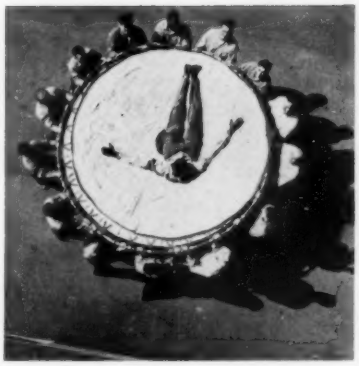
PLUS Lowest TCL (Total Cost of Lighting), which means cost of lamps plus power plus maintenance. Get the most light for your money. Call your Sylvania representative. Or write: Lighting Division, Sylvania Electric Products Inc., Dept. 63, 60 Boston St., Salem, Mass. In Canada: Sylvania Electric (Canada) Ltd., Montreal.

SYLVANIA

SUBSIDIARY OF

GENERAL TELEPHONE & ELECTRONICS

GENERAL SYSTEM



Recruits learn the art of jumping into and holding the life-saving net.

Captain Sholtz demonstrates how to bring a victim down a rope.

Recruits enter and leave the smoke-filled chamber with the help of proper breathing apparatus.

Confidence in their ability, knowledge of what to do, and courage to do it constitute the fundamentals of Pittsburgh's . . .

Fireman Recruit Training

By **STEPHEN P. ADLEY**
Fire Chief
Pittsburgh, Pa.

About halfway through the last week of an intensive three-week training course, the officers and the recruits receiving training enter a 20-by-30-foot basement room of our training center. As they wait, the room gradually fills with smoke. In line with their training, the men drop lower and lower seeking the relatively pure air at floor level. The experience acquaints the recruit with smoke and its dangers.

Later, we order them to re-enter the basement with a Chemox self-generating oxygen breathing apparatus or an All-Service mask. The first makes its own oxygen supply from the exhaled breath of the wearer. The second has an air-purifying canister that protects against combinations of carbon monoxide and all other toxic industrial gases, vapors, and smokes—providing there is sufficient oxygen in the air to support life. These demonstrate how much more effective they can be when using the right kind of equipment, properly maintained.

The course for Pittsburgh's firemen recruits is comprehensive and aggressive, and it is safe. The recruits learn how fires can be prevented and the nature of different kinds of fires.

The training center consists of a six-story tower-like brick structure and a one-story building that houses a wide variety of facilities and equipment, including classrooms, lockers, shower rooms, a dining room, and a gym. The new center was opened on March 2, 1959 and has already produced 20 classes.

The center trains fire fighters for 51 engine companies, 22 truck companies, eight emergency squads, a fire boat and a fire-prevention bureau—manned by 1,070 men.

Captain George H. Brennan, in charge of training for the last seven years, is a long-time fire fighter. He is assisted by Captain Stanley C. Sholtz, also a veteran and in charge of Emergency Squad No. 5 when not on duty at the training center.

We also receive assistance from the University of Pittsburgh Graduate School of Health (mouth-to-mouth resuscitation), Duquesne Light Company, Equitable Gas Company, U. S. Bureau of Mines (handling various liquids and gases), American Red Cross (first aid), and Mine Safety Appliances Co., (masks), during specific phases of the program.

And, if anyone else is deserving of credit, it is Harry Dupont of the North Braddock Volunteer Fire Department. He is a welder for U. S. Steel but still finds time to assist us during mask drills.

Classes, usually 25 recruits in each, are conducted six hours a day, five days a week, for three weeks, and cover:

Alarm systems
Automatic sprinkler and standpipe systems
Auxiliary equipment

(Continued on page 163)

WE'RE MOVING!!! The American Concrete Corporation announces a move to Waukegan, Illinois—improved service • improved delivery • enlarged production facilities—for the manufacture of quality concrete poles, lighting standards and related products.
American Concrete
Stress-Spun Concrete Lighting Standards
Dahringer Road, Waukegan, Illinois

Recruits receive training at this center in classes of about 25 each.

(Continued from page 161)

Care and maintenance of equipment
Chemistry of fire
Duties, rules and regulations
Fire extinguishers (types and operation)
Fire prevention and inspections
Forcible entry and minor extinguishment
Hose evolution and care
Knots and hitches
Ladder evolution
Life-net evolutions
All-Service mask
Pneolator
Chemox self-contained oxygen breathing apparatus
Nomenclature
Rescue and first aid
Safety
Salvage and overhaul practices
Use of tools
Ventilation practices

We stress confidence during each phase of training. It asserts itself during net jumping drills—first from one-story height, then two stories, and finally three stories. It becomes more pronounced during Pompier ladder drills when the recruits climb to the top of the training tower, and in the rope "ride" from the roof to the ground. There is little hesitancy on the part of most recruits after watching the captains in charge perform. The men don't do anything until one of the captains has done it. During all drills, one point is highlighted above all others—safety.

Smoke Drills

Typical is the stress on breathing protection during smoke drills. The training center is equipped with a Pneolator, 12 Chemox oxygen breathing apparatuses, and 12 All-Service masks. (Throughout the city's department, there are eight Pneolators, or one for each emergency squad; and each engine company has two Chemox and four All-Service masks).

The Pneolator has proved valuable at many fires in the Pittsburgh area on victims of asphyxial accidents. The automatic device duplicates natural breathing for victims of heart seizures, shock, smoke inhalation and other similar emergencies.

But, the All-Service mask is the breathing equipment used most. Recruits concentrate on this mask in class for several hours and then spend a half day each week using it under smoke and other conditions, including an ammonia gas room, in the fire tower. When a man leaves here, he should have confidence in this equipment. If he doesn't, he shouldn't leave. This mask may help him save a life some day—or, it may even be responsible for saving his own life. We teach the men to work in pairs and, just as important, to use the right breathing apparatus.

Captain Brennan leads the way up the face of the training tower, using Pompier ladders.

Pittsburgh's recruits are taught that the mask—equipped with a clear-tone speaking diaphragm—can be used in any fire in every area except in a sub-basement; that it can be used in a basement that has a window leading to the outside; but never to go below ground level.

If the fireman has 16% oxygen, that's sufficient. The facepiece of the mask will pull in if oxygen content is insufficient. Or, if he sees a flame, there is sufficient oxygen.

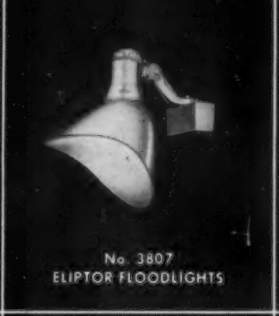
The men learn to work as a team, either two or four together. After they get a "taste" of smoke in training they return to the basement chamber with masks on—entering from the first floor. They feel their way down the darkened stairway to the basement and confidently follow the wall to the smoking fire bins to identify them. The training emphasizes that one has to find a fire before trying to put it out. They then return to ground level and enter a room filled with ammonia fumes. We instruct them to open their masks and take a "whiff." When they do, they never forget what the mask is for.

The training emphasizes that the public depends on firemen for protection. When the occupants run out of buildings during a fire—that's when the fireman goes in. ◄◄

No. 560-30-3 No. 115-40-5B
RIGID POLES

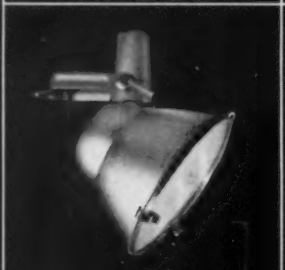
No. 199-Series
HIGH STRENGTH HINGED POLES

No. 4213-P
ALUMINUM FLOODLIGHT

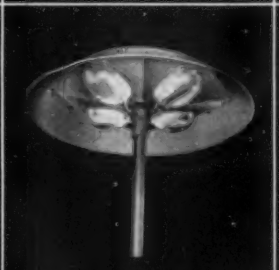


No. 3807
ELIPTOR FLOODLIGHTS

No. 2001 REAR
SERVICE FLOODLIGHT



No. 4411-P
ECONOMY FLOODLIGHT



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Send for the comprehensive Revere Catalog that lists hundreds of outdoor lighting products, applications and specifications

Revere's 136-page outdoor lighting catalog shows you the industry's widest range of outdoor fluorescent, incandescent and mercury luminaires, as well as poles and accessories. Revere equipment is *design-matched* for best appearance and peak lighting efficiency . . . *structurally-matched* for strength, balance, trouble-free installation and easy maintenance. Write today for your copy of this easy-reference catalog of outdoor lighting equipment.

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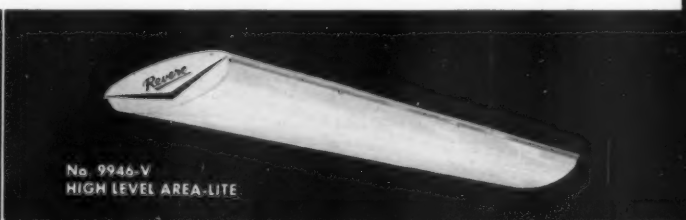
FLUORESIGN LUMINAIRE



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HIGH LEVEL AREA-LITE

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UNITIZED ENDOVAL

No. 2513-8175
UNITIZED URBANOVAL

No. 2274
ENDOVAL

No. 2501-8250
URBANOVAL

No. 6823-NFH
QUARTZOVAL 500"

Business Machines Make Water Works Businesslike

By W. H. NUSSBAUM
President
Board of Public Works
Ramsey, N. J.

To administer a public utility, such as our water department, automatic accounting machines mean the difference between knowing what you are doing and not being sure. It means being confident that you know that the work is efficient, instead of merely hoping that it is. Specifically, now that we have mechanized the accounting work, we have realized these advantages:

- **Our Operating Committee can check the efficiency of the system by comparing the gallons sold, as shown on the journal, with the gallons pumped, as recorded daily.**
- **The members of the Board of Public Works now can keep informed about the status of each budget item.**

This is one of the most important functions of machine bookkeeping.

Last year, the Water Department pumped a total of 228,008,000 gallons; in 1959 the total was 231,782,000 gallons. Since the population of the borough increased during 1960 and, had all other conditions remained equal, the gallons pumped in 1960 should have exceeded the 1959 figure. This seeming anomaly is explained by the fact that the Board, by separate bond issue (not part of the 1960 budget), erected a 2,000,000-gallon steel tank to replace an open concrete reservoir that had been in operation since 1913. When the old reservoir was demolished we discovered a substantial hidden leak under the reservoir.

We do the billing and accounting work of the department with the aid of a Borroughs Sensimatic accounting machine installed in 1957.

The meter reading slips permit the meter reader to determine the amount of water used by a simple direct subtraction for every customer in each quarter. At the same time, by referring to a billing chart, he records the total dollar value of the bill. The slips are then checked for accuracy at the office and are ready to be transferred to the customer's water bill.

The bill being used by the Board consists of a post card with perforated stub. The cards are pre-addressed from plates which are arranged in files in the order in which the meters are read. Each customer has a code number indicating area, street and house number. The customer's last name and the code number is part of the plate and is positioned to print on the address side of the post card stub. The same code number appears in the heading of the customer's water-ledger card. The accountant then inserts the card

(Continued on page 167)

The author, with Mrs. David Scott, manager of the water office, and Charles W. Meyerhoff, superintendent of the Ramsey Board of Public Works, reviews the budget report compiled on the Burroughs accounting machine.

BUDGET REPORT

BOARD OF PUBLIC WORKS
WATER DEPT.
RAMSEY, N. J.

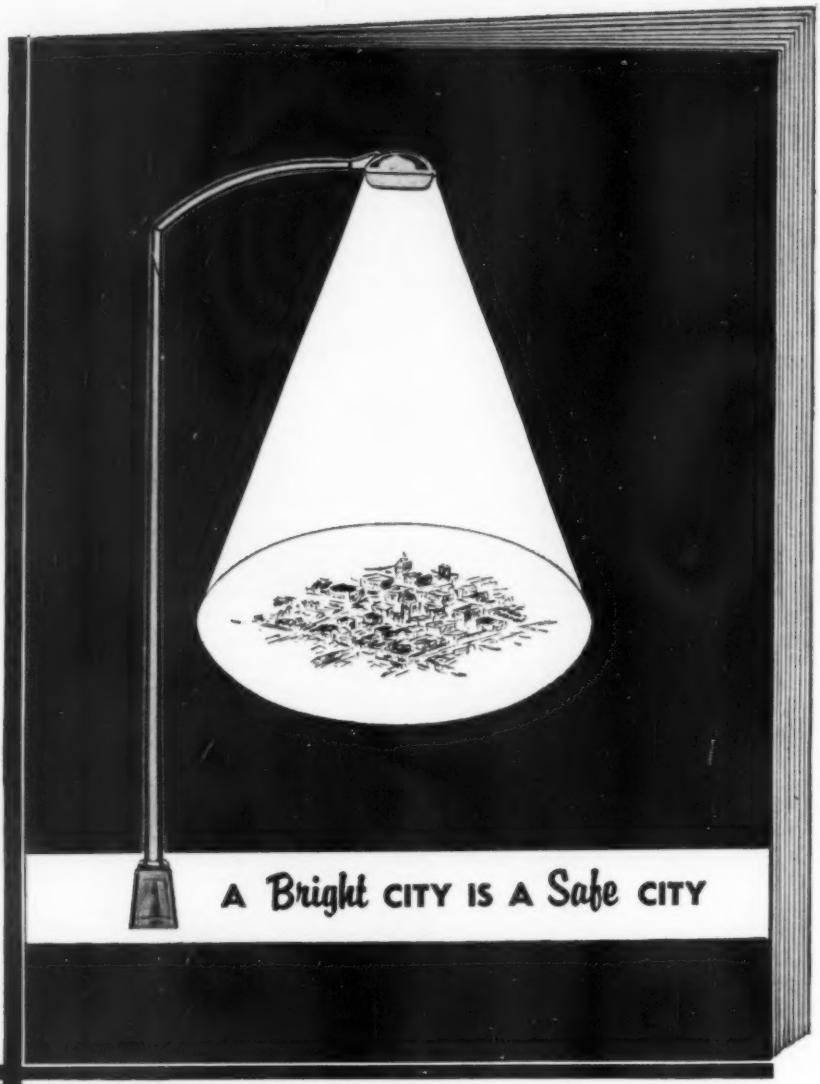
DATE DECEMBER 31, 1960 DEPARTMENT ALL

OPERATING:	ACCOUNT NUMBER	BUDGET	EXPENDITURES	UNEXPENDED BALANCE	OUTSTANDING ENCUMBRANCES	UNENCUMBERED BALANCE
Salaries	101	28,120.00	21,501.88	6,618.12		6,618.12
Hospitalization	102	225.00	236.08	-11.08		-11.08
Taxes	103	200.00	159.20	40.80		40.80
Insurance	104	1,500.00	1,056.19	443.81		443.81
Heat	105	500.00	293.10	206.90		206.90
Light & Power	106	18,000.00	13,300.13	4,699.87		4,699.87
Telephone	107	500.00	410.30	89.70		89.70
Miscellaneous	110	10,000.00	6,531.67	3,468.33	78.49	3,389.84
Auto Maintenance	111	3,500.00	2,807.15	692.85	76.02	616.83
Postage	119	250.00	228.39	21.61		21.61
Printing & Stationery	120	700.00	611.02	88.98		88.98
Clerk [illegible]	121	300.00	300.00	.00		.00
[illegible]		[illegible].00	[illegible]	[illegible]		[illegible]

free guide

TO PLANNING AND PROMOTING

STREET LIGHTING PROGRAMS



Here's help for those planning street lighting programs. "A Bright City is a Safe City" contains charts and tables on traffic volume, light intensities, pole spacing, mounting heights and other valuable information. It also describes and illustrates relighting projects of specific cities and towns. Get YOUR FREE copy NOW!

Published in the interest of better lighting for our streets and highways.

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KERRIGAN IRON WORKS COMPANY
NASHVILLE, TENNESSEE
SUBSIDIARY OF
ROCKWELL-STANDARD
CORPORATION

STREET AND AREA LIGHTING STANDARDS IN STEEL AND ALUMINUM

(Continued from page 165)

and the customer's water-ledger sheet in the accounting machine and enters the previous reading, the present reading, the amount and the code.

The machine automatically subtracts meter readings, prints the gallons used, the date on the bill, repeats the amount and the code on the stub, skips over to the ledger and repeats the information on the customer's account. Meanwhile, a journal record has been made by means of carbon paper and at the same time the total gallons and the total dollars billed are accumulated for each daily billing run. The dollars are analyzed and automatically totaled by the various billing codes.

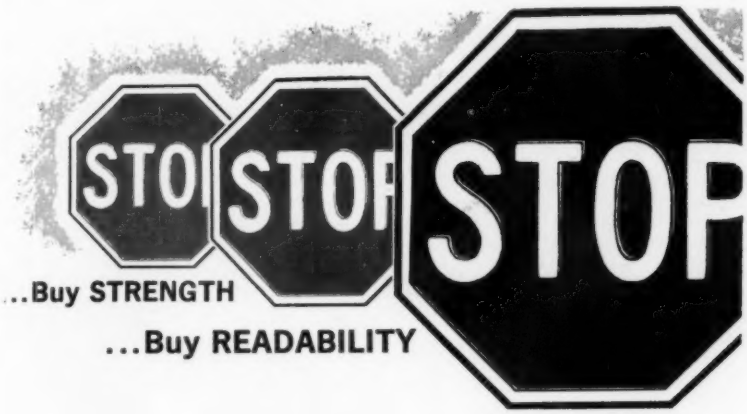
Thus, from the automatic analysis and totals of the billing operation the operating committee is able to check the efficiency of the system by comparing the gallons sold as shown on the journal with the gallons pumped as recorded daily by the superintendent. We believe that the losses due to normal leakage, hydrant service, blow-offs and the like should be held to a maximum of 15%.

The mechanics of crediting the customer for payments made are these: The customer detaches the stub from the bill and sends it with his check to the borough treasurer who turns over to the water office these stubs and a deposit ticket showing the total of the stubs and the money received each day. By means of the code number on the stub, the machine operator selects the customer's water-ledger card and posts the amount on the stub to the credit side of the card and inserts the code number from the stub in the account-number column of the ledger sheet. At the same time, a cash-receipts journal is created as a carbon copy of the machine postings. The recording of the customer code number on the ledger card thus serves two purposes: (1) the auditor in comparing the code number recorded in the account number column with the code number on the heading of the ledger sheet is assured that the receipt was credited to the proper account and (2) the account number appearing on the cash journal shows by whom payments were made on that particular day.

As mentioned earlier, one of the most important functions of the machine is that of keeping the members of the board apprised of the financial position of each budget item. We prepare a budget at the beginning of each year, broken down into (1) the various operating expense items such as, salaries, taxes, insurance, light and power, telephone, repairs, replacements, etc. and (2) into capital-improvement items such as meters and connections, plant improvements, etc. and (3) into debt service to provide for the payment of the principal and interest on bonds.

Each budget item is then set-up on a budget ledger sheet. When supplies, meters or connections are needed, a purchase order is made up showing the quantity of items ordered and the total price as quoted. This purchase order is immediately entered on the proper ledger sheet under "Encumbrances—Placed" and is automatically deducted from the budget appropriation for that account leaving an unencumbered balance which shows the board exactly how far it can go in further purchases for that item. At the same time and on the same line the machine increases the outstanding encumbrances and registers the total cash expenditures which had been

(Continued on page 169)



...Buy STRENGTH

...Buy READABILITY

...Buy DURABILITY

...BUY EMBOSSED MIRO-FLEX SIGNS!

Uniformity... uniformity of strength, readability, and durability is the key to economical signing without compromising quality. Miro-Flex embossed signs are the answer. These tough, weather-resistant signs offer snap-out legibility of raised lettering with baked-enamel finish. Extra strength and rigidity bring a standard of uncompromised quality to the traffic control sign field. Reflectorized signs also available with moisture-proof beads, reflective sheeting, or plastic lenses. Made of zinc-coated, Bonderized steel, Miro-Flex sells the best sign on the market. Stop, buy strength — Stop, buy readability — Stop, buy durability. Competitive makes are... rarely as attractive... never so enduring.

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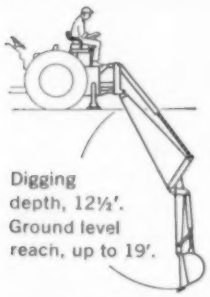
Standard Traffic Signs Available for Immediate Delivery at Northeastern Warehouse

Koontz Equipment Corporation, 325 Ohio River Blvd., Emsworth, Pittsburgh 2, Pa.

All New Better Than Ever Pippin *Backhoes*



Digging depth, 12½'. Ground level reach, up to 19'.

. . . With Increased Digging Power To Cut Your Digging Costs

Now with more digging strength — the new, re-designed PIPPIN BACKHOES let you get the job done faster, easier than ever before! Your tractor, whatever the make or model, becomes a cost-cutting powerhouse with a PIPPIN.

The new PIPPIN BACKHOES have the extra power, reach, digging depth, maneuverability and durability you can't get in other backhoes — just what you need for years of efficient, repair-free operation.

CHECK THESE PIPPIN FEATURES

- New chrome-nickel-molybdenum boom bracket for added strength at stress point.
- New hydraulic cylinders for improved digging power.
- Hydraulic hoses 90% concealed for maximum protection, neat appearance.
- Four steel clamps hold backhoe securely — yet detach quickly.
- Hydraulic operating pressures up to 2,000 psi.

Other Cost-Cutters in the Pippin Line

ANGLEDOZERS BULLDOZERS
NEW HYDRAULIC WINCH
NEW STUMP REMOVER
SNOW REMOVAL EQUIPMENT
Write for Details

Two models — Send for literature and name of nearest dealer.

WINDSOR Pippin CORPORATION
WINDSOR, VERMONT

(Continued from page 167)

made to that date. When the bill for the goods covered by the purchase order is received and approved, "Encumbrances" are "liquidated" and automatically expenditures are charged, outstanding encumbrances are credited, the amount of the expenditure is added to total expenditures and since there has been no change in the budget appropriation or in the unencumbered balances, these items are repeated by the machine without change.

At the end of each month there is prepared a budget report which is handed to each of the members on the Board showing all the expenditures, the unexpended balances, the outstanding encumbrances and the unencumbered balances for their guidance. On the same report the members are kept advised of the revenues realized each quarter and the collections received as well as the gallons pumped each month and billed each quarter.

The Board of Public Works of the Borough of Ramsey consists of the mayor, who serves as chairman, and six members appointed by the mayor and council.

It is self-sustaining and receives no financial aid from the taxpayers other than through the sale of water, charges for taps, new services, etc. For the purpose of apportioning the work load, the board has divided itself into three regular committees: (1) The planning committee, whose duty it is to provide a sufficient number of wells to meet the demands for water and to develop the distribution and storage systems; (2) the operating committee, whose duty it is to oversee the actual operation and maintenance of the system; and (3) the finance committee, whose duty it is to prepare an annual budget; to supervise the financial operations; to recommend rates, etc. ◄◄

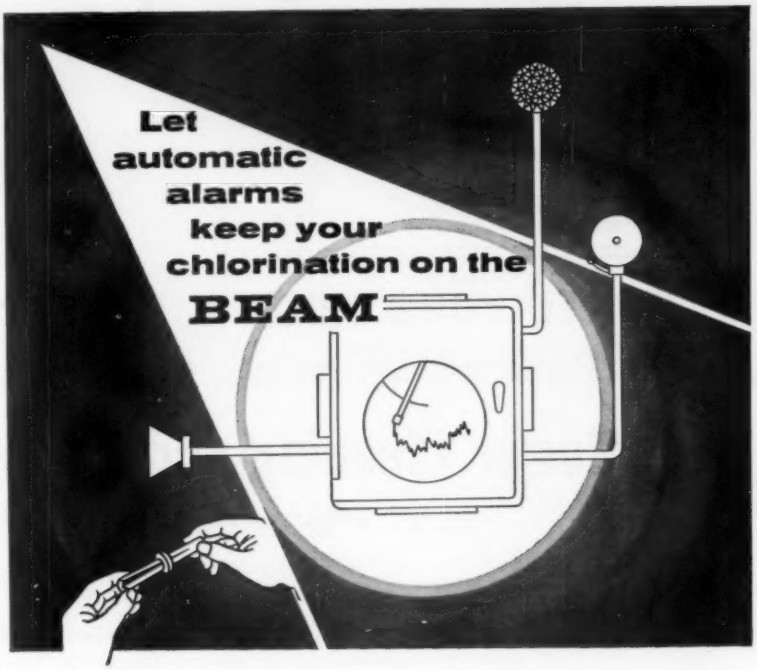
Non-governmental Fulbright Subsistence Fellowships Available

The Fulbright program of predoctoral fellowships for study abroad during 1962-63 again offers the possibility of internships at the headquarters of international or national non-governmental societies for administration, local government housing and planning, combined with advanced study at European universities.

Twelve awards have previously been made to spend an academic year at the International Institute of Administrative Sciences, Brussels, or the International Union of Local Authorities, The Hague, or the International Federation for Housing and Planning, The Hague, or national unions of municipalities in Norway, West Germany and Finland.

The fellows have usually held an M.P.A., M.C.P., or equivalent; they need not be candidates in course for any degree. Some have been assistants to a city manager or on the staff of a planning agency. The fellowships pay transatlantic fare and subsistence only, with no allowance for dependents. The age limit is 35.

The deadline for applications is November 1961 for the academic year 1962-63. Forms are available from the Information and Counselling Division, Institute of International Education, 800 Second Ave., New York 17, or from a campus Fulbright representative. Information about IIAS, IULA, IFHP, may be obtained from Charles S. Ascher, Institute of Public Administration, 684 Park Ave., New York 21. ◄◄



Convert your chlorine system to a system that watches itself, monitors its own results. Conversion is easy with Wallace & Tiernan Automatic Alarms. These dependable warning devices aid in overall operating efficiency . . . give you the final assurance that your system is operating properly, that your water is safe. And these alarms are flexible enough to tie in with any physical layout, any type of signal.

W&T Alarms warn of any deviation from desired performance. You get audible or visible warnings, at or remote from the chlorinator. Alarms warn you of dangerous pressure increases, lowered or exhausted chlorine supply, malfunctions in auxiliary equipment, and other hazards. And, to keep your system "on beam" at all times, alarms show residuals outside pre-set limits.

With automatic alarms by Wallace & Tiernan you avoid dangerous underchlorination and wasteful overchlorination. You save man-hours for more efficient use of personnel.

For more information, write Dept. S-143.00

WALLACE & TIERNAN INCORPORATED
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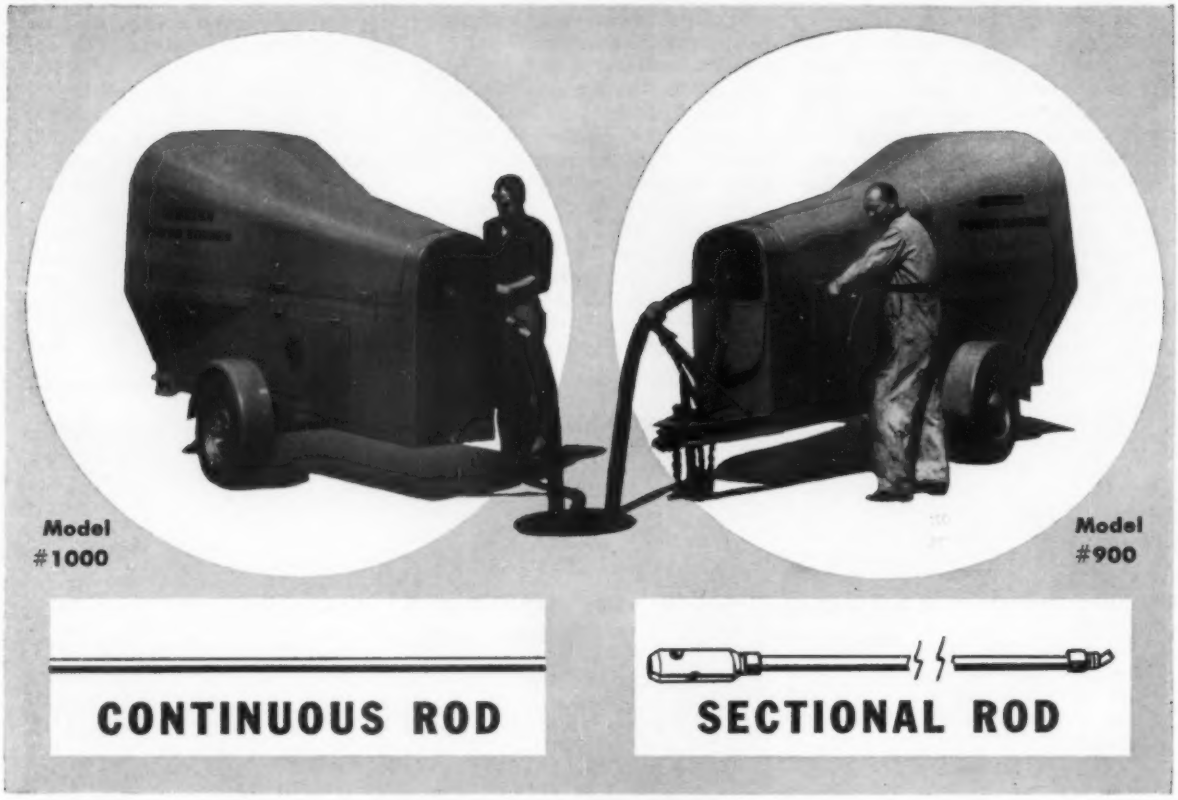


For Sewer Cleaning and Threading . . .

. . . which do you prefer?

O'Brien has both!

Whatever the reasons . . . personal preference or custom job requirement, O'Brien offers a choice of either continuous rod or sectional rods. Select a powerful "man-sized" unit that features the greaest advancement in compact design and engineering ever offered!

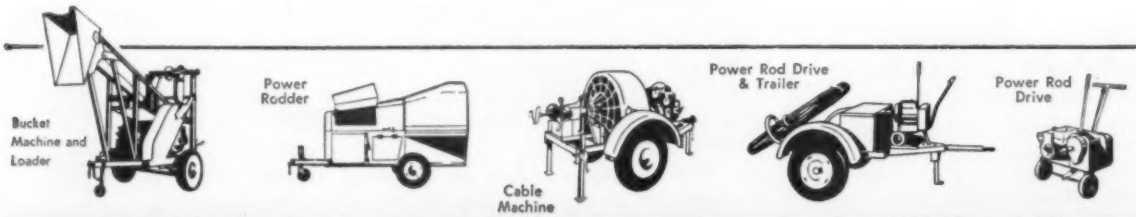
Uncontested champions for economy and efficiency

Dynamic, positive drive and pull back power, automatic safety throwout control, fully enclosed body, uses 5/16" or 3/8" rod, simple one man operation, footage meter, 9 or 12hp. engine with 12 volt starter, generator and battery . . . plus other outstanding O'Brien features. Units available in truck mounted design for fast, easy mobility.

It's wise to get the best!

The savings in better performance and greater efficiency is worth the few dollars more to get the very best there is —O'Brien! The complete line of O'Brien powerized sewer cleaning equipment reflects years of actual experience in sewer maintenance. Here, truly is time-tested equipment, designed to custom-fit any job requirement.

Get a FREE demonstration to see—how and why —O'Brien is the "cadillac" in sewer cleaning equipment.



O'Brien MANUFACTURING CORP.

5634 NORTHWEST HIGHWAY • CHICAGO 46, ILL.
ROdney 3-7433

A Caterpillar motor grader works with a pulvi-mixer to break up and prepare the base.

This spike-tooth harrow pulled by a Ford tractor did an excellent job of spreading cement.

Joint Venture Gets Street Paved

By **CLYDE H. EMMONS**
City Manager
McKinney, Texas

A new high school surrounded by an unpaved street is never desirable. To rectify this condition, the City of McKinney, Texas, and the McKinney Independent School District entered into a joint cost-participation venture to pave the street. The project also served as a training program for the city's street department.

We selected a pavement consisting of six inches of compacted soil-cement stabilized base, surfaced with one-inch of White's Uvalde rock asphalt. Using city-owned and rented equipment, our own forces did the work under the direction of Bob McDowell of the Portland Cement Association.

Equipment

Equipment used included a motor grader with scarifier and new blade, spike-tooth harrow, sheepsfoot roller, asphalt distributor, self-propelled diesel pulvi-mixer, small tractor, pneumatic roller, flat-wheel roller and a water distributor.

The processing procedure, as outlined by Mr. McDowell for city forces, was as follows:

Soil Cement Base, Sequence of Operations

A. Preparation of Section (day before cement).

1. Blade to crown and grade.
   a. Add borrow if needed.
2. Scarify with maintainer scarifier.
3. Pulverize with pulvi-mixer.
4. Add water with pressure water distributor, followed closely by plow for proper penetration of water into base material. Position the truck by the gutter line or intake line.
   a. Spray-bar even multiple to street width.
5. Mix with pulvi-mixer.
6. Blade to crown and grade with pneumatic roller working.
   a. Smooth surface is necessary for uniform spreading of cement.

(Continued on page 175)

After the addition of water and final shaping of crown and grade a Rosco pneumatic roller started the compacting process.

TO START THE DAY, Mayor Michael J. Nervine of Bernardsville checks over the list of work assignments with Trojan operator Leroy Pierson.

SUMMER — Scarifier teeth permanently mounted at rear of bucket rip old asphalt pavement to begin work on a road reconstruction project.

In The Borough

SPRING — Trojan's 13'3" overall height makes trimming of overhanging limbs and branches along streets a fast and easy chore for the park department personnel.

FALL — The 8,000 lb. lifting capacity of the model 134, low load carrying position and 40° tip-back bucket facilitates truck loading of dead trees and heavy debris.

ALL YEAR—Trojan's long reach and high dumping clearance makes truck loading fast and easy... Operators can move in and out without damage to truck sides.

WINTER—Snow plow equipped Trojan keeps traffic moving in spite of heavy drifts. Quick change to bucket permits truck loading snow in crowded downtown areas.

# of Bernardsville...

a Trojan model 134 tractor shovel has completed its first 4-season cycle to the complete satisfaction of officials charged with maintenance of 42.64 miles of streets . . . In winter, utilizing 4-wheel drive and plow equipped, it quickly opened streets to traffic — then, changing to a 1-1/3 yd. bucket, truck loaded snow in downtown business sections and parking areas . . . During spring and summer it ripped old pavement with scarifier teeth permanently mounted at rear of bucket; graded bituminous material on street repair jobs; handled shoulder maintenance and truck loading of gravel, stone and fill. The park department utilized Trojan's raised bucket height of over 13′ to cut and trim trees . . . Fall found it cleaning up leaf and trash accumulations and loading heavy debris for disposal.

. . . Mayor Michael Nervine of this growing New Jersey community states . . . "Our Trojan's high over-the-road speed lets us fully utilize its many job applications. It is powerful, low in operating cost, safe and easy to operate. We like the protection to our operators afforded by the reverse curve lift arms . . . In these days of rising taxes we have cut costs in our public works department through effective all-year use of our dependable Trojan tractor shovel."

. . . There is a Trojan tractor shovel designed especially for municipal work and municipal budgets. Dependable performance plus a variety of quickly interchangeable attachments make it the machine your town can keep hard at work every day of the year.

TROJAN®
TRACTOR SHOVELS
YALE & TOWNE

AD NO. 44-46

THE YALE & TOWNE MANUFACTURING COMPANY
TROJAN DIVISION • BATAVIA, NEW YORK

Visit our Exhibit at the 1961 APWA Congress and Equipment Show in Minneapolis!

Here's why you get Better Trees and Nursery Stock from COLE NURSERY CO.

IDEAL soil and climate conditions, careful preparation and proper irrigation contribute to the quality of Cole plants. Highly-mechanized systems of planting, cultivating and root pruning produce strong, healthy plants, with more compact root systems, at lower cost. Mechanical digging methods and careful packing assure delivery of Cole nursery stock in good condition with uninjured roots.

Since 1881 Cole Nursery Company has concentrated on developing and producing only the better varieties and highest quality trees, shrubs, evergreens, hedge plants and ground covers. The extensive experience of more than 75 years is applied at our 1200-acre properties at Painesville and Circleville, Ohio. These large-scale operations are among the most modern nurseries in the industry.

Literally millions of trees and plants, in more than 360 varieties, give you a dependable source of material to meet your needs in large quantity and wide variety. We will be glad to quote on your requirements.

Spectacular SUNBURST
(Plant Patent No. 1313)
The sensational, new two-color tree with brilliant yellow foliage on branch tips. It appears to burst with bloom all summer long.

These patented Cole Originals help solve your landscaping and maintenance problems

Although each variety is unique, these trees have all the best qualities of the Honeylocust. They transplant easily, require no staking, are exceptionally strong, hardy and relatively fast growing. Of many thousands grown, only a very few have exhibited small, embryo thorns which drop off or are absorbed by the growing tissue of the tree. They are widely adaptable to almost any soil or climate, readily withstand ice and storm damage, drought and poor drainage. They cause no ground-litter, require no fall clean-up or leaf removal. You'll never buy trees that cost you less for maintenance, damage or replacement.

Cole's New IMPERIAL
(Plant Patent No. 1605)
The graceful, spreading, new Honeylocust that grows strong and straight *without staking*. A favorite of landscape men and tree experts.

Cole's new SKYLINE
(Plant Patent No. 1619)
Distinctive, stately variety with strong trunk and shapely crown. *Needs no staking*. Dark green foliage has heavy, leathery texture.

Cole's New MAJESTIC
(Plant Patent No. 1534)
A clean, graceful, symmetrically-branched tree. Produces a straight, sturdy trunk and compact crown *without staking or special trimming*.

Cole's New TALLHEDGE
(Plant Patent No. 1388)
A thornless, glossy Columnar Buckthorn that grows to 12 feet. Ideal for tall, narrow, dense hedges or screens. Bears colorful berries.

LARGE QUANTITIES
360 VARIETIES
WRITE FOR CATALOG

THE COLE NURSERY CO.
PAINESVILLE, OHIO

OHIO'S LARGEST
WHOLESALE NURSERY
ESTABLISHED 1881

(Continued from page 171)

B. Soil Cement Processing.

1. Spread cement uniformly with spike-tooth drag harrow with teeth set in flat position.
2. Scarify.
3. Dry mix (at least twice).
   a. Sweep gutters between mixings.
4. Add water followed by plow attached to tractor.
5. Moist mix.
   a. Repeat 4 and 5 as necessary.
6. Work gutter faces.
   a. Sweep gutters.
   b. Pull gutter faces.
   c. Clean gutter face (scarifier tooth) assisted by hand shovelers.
   d. Pull the windrow back toward gutter.
   e. Mix gutter line and continue mixing across section to and including other gutter line.
7. Sheepsfoot (follow mixer across section).
   a. Roll until the sheepsfoot roller "walks" out, indicating firm compaction.
8. Apply heavy shot of water.
   a. Spiketooth drag harrow (loaded).
9. Blade to crown and grade.
   a. Two times over.
   b. Carry small roll in blade —move as little material as possible.
10. Pneumatic roll (iron out *well*).
11. Skin with blade (at least twice).
   a. Waste all loosened material.
12. Pneumatic roll once over.
13. Flat wheel (flat over).
14. Pneumatic roll once over.
15. Shoot RC-2 at 0.2 gallons per square yard.
   a. *Immediately* precede RC-2 with heavy shot of water.
16. Blot with sand or equal. (Buck shot gravel).

We spread the cement with a farm-type drag harrow. This proved to be a most effective method of cement distribution other than a special cement-distribution box.

Results—the new high school is now surrounded by a paved street and the city learned a new method of street paving. We used native gravel with approximately 8% of cement by volume to pave some 3,500 feet of street. The cost came to $1.84 per square yard including cost of native gravel in place. ◄◄

APCO SUPER-DeLAVAUD CAST IRON PIPE WITH ALTITE® JOINTS

meets ALL 10 requirements for underground mains

- ✔ Service for centuries
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- ✔ Strength against crushing
- ✔ Strength against impact
- ✔ Beam strength
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NO cheap substitute pipe can meet these "musts"

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SPECIFY YOUR TITLE ON YOUR REQUEST

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CHICAGO 12

TARCO "Big Scottie"---

especially designed for Ice and Snow Control

(Not a 'doctored-up' agricultural spreader)

Ideal for spreading abrasives, straight chemicals or mixtures.

Body Capacities: You have a choice of three models for either chassis-frame or dump-body mounting: 3 cu. yd., 8 ft. long; 6½ cu. yd. 10 ft. long; 7½ cu. yd. 12 ft. long. Each model takes available hopper extensions to increase capacities.

POWER and CONTROLS. 18 H.P., 2 cylinder, gasoline engine—or fully hydraulic. Complete inside cab controls or outside controls available.

Conveyor. Rugged, fully-exposed, auger-type material conveyor—speeds regulated by 3 speed transmission, if desired.

"Big Scottie" Spreaders are especially designed and engineered for the rough, tough work of spreading Ice and Snow Control Materials. They'll 'stand the gaff'.

See your Tarco Dealer or write for details.

(APWA Minneapolis Meeting: A-51, A-52, B-38)

TARRANT MFG., CO.

23 Jumel Place Saratoga Springs, N. Y.

10 Foot View Of 26,050 Foot Water Line

A little bulldozer was used to good advantage on this 48-inch five-mile water supply line in Columbus, Ohio. The first job it did for the Complete General Contracting Company of Columbus was to level the bottom of the trench and prepare a bed for the pipe.

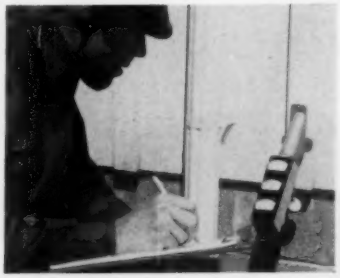
After the crane lowered the pipe, a workman placed blocking in the bell and the little dozer shoved the pipe home as shown in the picture at the top of the page. The line was installed under the direction of Ernest H. Stork, Director, Department of Public Service and Frank Wright, Superintendent, Division of Water, Columbus, Ohio.

On other parts of the job, a backhoe was used to dig the trench, place the pipe and shove the joint home. Burgess & Niple of Columbus were consulting engineers. The pipe was manufactured by Price Brothers Company, Hattiesburg, Mississippi and Dayton, Ohio.

Price Brothers
CONCRETE PRESSURE PIPE

The householder learns how the meter in his basement is connected with a socket located outdoors.

The meter reader inserts the read-out into the shielded receptacle outside the house . . .



. . . and then quickly and conveniently takes his reading.

New Remote Reading System for Water Meters

. . . places no load on meter gears

At almost the same day that the United States was putting its first astronaut into space, the Buffalo Meter Company was bringing the meter reader out of the damp darkness of the basement into the bright open space of the outdoors. Buffalo's research department has developed a remote-reading system that will keep the water-meter reader from getting bitten by dogs confined in the basements, from having to skip meters because of locked doors, from having nervous housewives think they are burglars and calling the police and from similar annoyances that now beset these men. The research studies indicate that the system will:

- **more than double the speed of reading meters located in houses**
- **avoid call-backs, when occupants are away**
- **give water utilities greater latitude in hiring meter readers**

The new system, called the Teleread, permits readings to be taken at any point up to 200 feet from the meter itself. One can place the meter anywhere on the pipeline wherever convenient, inside the building if desired, and can read the meter from a plug socket installed at any convenient spot on the outside. Several of these remote-reader sockets can be clustered at a single spot to serve neighboring homes if desired.

The significant feature of this remote-reading system is that it does not throw a mechanical load on the gears of the meter. The Buffalo research team was looking for something that would not interfere with the meter accuracy or length of life, and still guarantee precise operation without maintenance problems.

The system starts with the usual round-reading register mounted on the meter in the conventional manner. Small, precise potentiometers, built onto the shafts of the register, connect with the shielded plug in a socket mounted on the outside of the house through a flexible, waterproof and vermin-proof cable. The register and potentiometers are in an oil-filled, sealed metal register box, so that they remain permanently free from dust or moisture.

The meter reader carries a read-out mechanism about the size of a standard flashlight. He also carries a test plug so that he can insure that the mechanism is in perfect working order and accurate at all times. A standard, semi-permanent one-volt mercury battery provides the electric power to make the reading. The read-out stem has been specially treated to prevent corrosion and thus insure a consistently smooth fit.

The meter reader inserts the read-out into the receiving socket on the house. After the meter reader notes the reading, he removes the read-out and the hands return to zero. The system is energized only during the period when the read-out mechanism is in place. Buffalo researchers were particularly anxious to avoid even the slightest friction load to the meter.

While the system was originally designed for Buffalo's American meter, the company reports that it will be marketed also by Hersey Sparling Meter Company and Gamon Meter Division on their meters.

A new bulletin describing the Teleread Remote-Reading-System in detail is available from Buffalo Meter Co., Inc., 2900 Main Street, Buffalo 14, New York. ◄◄

NEW! PUSH-OUT BODY by HOBBS HYD-PAK

See it at the APWA Show in Minneapolis!

Packs tighter, works economically, unloads anywhere!

Now, Hobbs Hyd-Pak brings you a new kind of refuse collection body. Instead of dumping its load, the new push-out body remains level and its 12½-foot long telescoping hydraulic cylinder expels the load through the rear door opening. Advantages? The big cylinder applies 111,820 pounds total packing force! And the push-out body can unload safely anywhere—on soft land fill or uneven terrain, and with an overhead clearance of only 10 feet. With one cylinder doing all the work of packing and unloading, the operation is simplified, and thus more economical.

"60 SERIES" DUMP BODY

CONTAINER SYSTEM

This new 21-yard body makes the Hobbs Hyd-Pak line of refuse collection bodies more complete than ever before. With a complete range of sizes from 13- to 24-yard "60 Series" dump units, an efficient, sanitary container system and a complete trailer line (from 32-yard single axle models to 60-yard tandems), Hobbs Hyd-Pak offers you modern, low-cost equipment for every kind of refuse removal job.

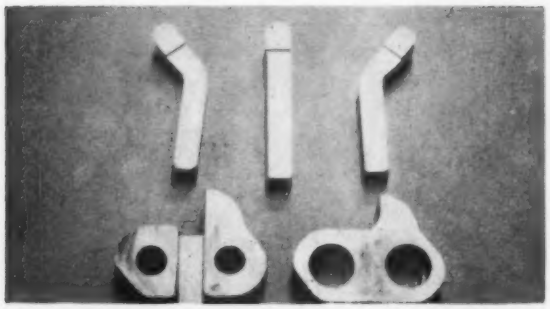
TANDEM HYD-PAK TRAILER

See all this equipment in operation at the APWA Equipment Show in Minneapolis, Sept. 24-27. Or contact Ted Walters at the address below to set up a free demonstration:

1-G-1

Hobbs Hyd-Pak Division
Hobbs Trailers
609 North Main
Fort Worth, Texas

HOBBS HYD-PAK



The new teeth with matching sockets are tough enough so that they do not bend or break and hard enough to cut through stones and metal.

A cutter blade equipped with these improved teeth will remove six times as many stumps as would the older type.

Put a Better Bite

. . . into stump cutting by using a precisely tempered tooth with a carbide tip and a specially designed socket

By **HARRY E. TURNER***
East Orange, N. J.

Treemen saw the first really practical stump cutter in 1957 at a National Shade Tree Conference held in Philadelphia, Pa. This machine, a Vermeer Pow-R-Stump Cutter, was the answer to the treeman's big problem of how to remove the tree stump without the laborious work of digging it out. Now all an operator has to do is to back the cutter over a large stump, push a few levers and a powerful cutting wheel will cut out the stump 10 to 12 inches below ground level. This is accomplished in a matter of minutes as compared with the old conventional dig-out and chop-out method which took hours and even days.

Because the teeth on the cutting wheel of this machine do most of the work, metallurgists started developing new and improved teeth for this powerful cutter that would not bend or break, yet be strong enough and hard enough to cut through stones, metals and other hidden bodies in the trunk and root structures of the tree. It is not uncommon to find at the root of a tree, old pipes, spikes, or metal guards which once were placed around a newly planted tree as a protector during its early growth. We have found cases where trees have grown around steel fence posts and, in one removal cut out a six-inch iron ball that might easily have been fired from a cannon during the Revolutionary War.

Tough New Teeth

However, newly designed carbide-tipped teeth and matching sockets that hold the teeth in place have solved this problem. One such set of teeth represents development work by the Vermeer Manufacturing Company, maker of the Pow-R-Stump Cutter. Another, the Condesco teeth, were designed by Mr. Al DeShano, a metallurgist from Hamilton, Ohio, and are being distributed by Karl Kummerling, Inc., of Canton, Ohio. These teeth require metallurgical precision to get the correct hardness and temper in the metal. With this optimum hardness, they have changed the cutting pattern so the teeth cut faster with less wear on any one tooth. The original standard teeth would wear down after eight to 16 stumps whereas the new carbide-tipped teeth and matching socket permit us to cut out as many as 80 large stumps with less vibration and wear on the stump cutter. The carbide-tipped teeth cost a few dollars more but will outlast the regular teeth. The additional investment pays in the performance and time saved in changeover. As one tree man said, "The switch to these teeth is like going from cutting with railroad spikes to cutting with precision tools."

Twenty years ago when a tree was felled we would spend hours cutting it up with an old fashioned two-man cross cut saw, but today we do the same job with a gasoline or electric chain saw, with less effort and cost. The new stump cutter is similar for it is a tool that saves time and reduces the cost of tree removal. The savings to the city in sidewalk and driveway replacement alone has paid for this machine twice over in the four years we have been using the Pow-R-Stump Cutter. With the present high cost of labor, it is imperative that we use as many time-saving pieces of mechanical equipment as we can in order to reduce labor costs and do a better job. ◄◄

* During Mr. Turner's 18 years of service as City Forester and Secretary to the East Orange Shade Tree Commission, East Orange has gained a national reputation for being a "City of Beautiful Shade Trees." Mr. Turner has been with the City of East Orange for 37 years.

Handling Refuse is Quicker·Easier·Cleaner·Cheaper with the

SEAL-PRESS Hydraulically Operated Container System

Photo shows 20 cu. yard SEAL-PRESS Refuse Unit mounted on a compact White chassis with a side loader dumping a 2 cu. yard container.

Refuse is collected on the site in leak-proof welded all-steel containers, available in one or two-cubic yard sizes.

The container units are mounted on 5 inch casters to be easily and quickly rolled up to the side of a SEAL-PRESS Refuse Unit where it is easily fastened on to the truck track. The hydraulically operated system then takes over. Operator has complete control at all times. In a matter of seconds the container is raised, emptied and returned to the ground level.

The SEAL-PRESS Container System is bug free.. field tested and proven for 3 years by a contract operator.

Man hours are saved — more collections can be made — operating costs are lower. Operators are less fatigued. Write, wire or 'phone us for the distributor nearest you to show you this perfect combination — a SEAL-PRESS Refuse Unit and the Container System.

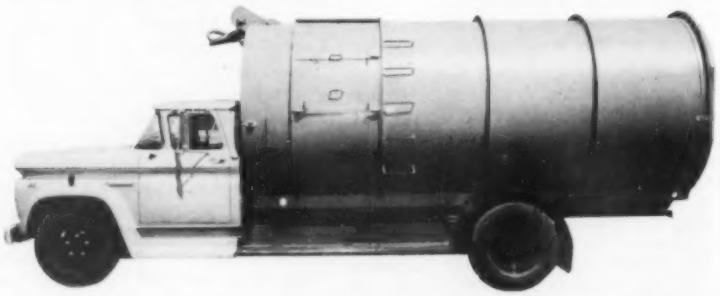
Go Hydraulic with. . .

Est. 1954

SEAL-PRESS, INC.

Rt. 10, Box 208, San Antonio, Texas

- New hydraulic double acting cylinder drives packer and ejection plate.
- 85,000 lbs. pressure at 1500 p.s.i. — more than any other unit available.
- Mounts on any truck or transmission. 3 sizes — 16-20-24 cu. yard units.
- Strong cylindrical design of Hi-tensile steel welded construction. 12 month warranty.



See the SEAL-PRESS demonstration at the September meeting of the American Public Works Assn.

The Water Picture in the United States

Some clouds appear on what should — and could — be a bright water picture. While America's water taps will not run dry, some may flow at only a trickle until remedial action is completed. Fortunately most cities recognize their water problems and are taking corrective action; but some expect financing difficulties. On the bright side, many communities blessed with adequate water systems plan to keep them that way. A recently completed survey by THE AMERICAN CITY bears out these statements and gives a good picture of today's water-supply conditions.

The United States has an ample supply of fresh water. While it may not be available where and when it is needed, the construction of storage and transport facilities can solve this problem. This accounts for some of the reported inadequacies. However, in most cases reported inadequacies stem from insufficient treatment and distribution facilities and only partial development or use of existing sources of supply.

City managers, city clerks, water superintendents and mayors from 6,370 communities provided data for the water-system-evaluation survey. Of these, 1,934 indicated current inadequacies and 529 reported impending inadequacies within five years. One hundred and twenty-six towns did not rate their water system while 3,696 reported having adequate systems. The balance of 85 towns gave no data on the adequacy question.

Communities reporting presently

(Continued on page 183)

INADEQUACIES

Evidence	Number of towns
Low pressure at peak periods	967
Rationing sometimes necessary	451
Difficult to meet industrial needs	406
Difficult to serve new residential areas	696
Inadequate storage, no emergency provision, poor fire rating	153
Poor quality water	58
Inadequate supply, other	128
No answer as to evidence	189

IMPROVEMENT PROGRAMS

Action	Number of towns
Study, plans or committee being formed	261
Bond issue or referendum anticipated (two months or more)	22
Bond issue just passed or imminent (within two months) Bonds being sold	21
Construction bids being asked or anticipated	37
Construction imminent (after bids) or in progress	56
Reference to other source for further information	134

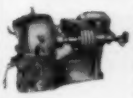
ANALYSIS OF SURVEY RESPONSE

Population Range	Towns Reporting	Total U. S. Towns	Percent Reporting
40,000-50,000	68	105	65
30,000-39,999	139	175	79
20,000-29,999	223	310	72
10,000-19,999	562	806	70
5,000- 9,999	888	1,433	62
1,000- 4,999	3,460	7,400	47
500- 999	1,030	7,595	14
Totals	6,370	17,824	36

BICO INC.
3116 VALHALLA DRIVE
BURBANK, CALIFORNIA

The Standard of Laboratory Test Equipment

for the mining and petroleum industries since 1888.



BRAUN PULVERIZERS for fast, clean preparation of any friable, metallurgical, industrial or chemical samples. Efficiency – Simplicity – Durability. Several models available.

DIRECT DRIVEN PULVERIZER for production line operation. Engineered for the busy laboratory where samples are run almost continuously. 2 or 3 H.P. built-in motor, no belts to slip, no gears to wear.

BRAUN CHIPMUNK CRUSHERS are rugged, designed to stand up day after day under the punishment of crushing rock in the assayer's laboratory. Wear and abrasion distributed over parts easily and inexpensively replaced. Models for 400 lb. per hr. and 800 lb. per hr. capacity.

BICO - BRAUN - DULIN ROTAREX for fastest possible determination of bitumen content, and character and gradation of aggregates in bitulithic paving materials. Motor powered and explosion proof laboratory models, also hand driven field models.

BICO-SHELL OIL DESIGN VISCOMETER BATHS. Completely self-contained units for either high or low temperatures. For ASTM Methods D-445 and D-446-39. Engineered for Capacity – Convenience – High Visibility.

BICO – Shell Design Quartz Tube SULFUR DETERMINATION APPARATUS for oils and organic materials. ASTM Method D-1551-58T. Excellent recovery regardless of sulfur content. Halogens and other acid forming elements determined by gravimetric or volumetric procedures.

BICO – BRAUN ELECTROLYTIC APPARATUS Model P.C.–6 Independent Units for determination of metals in ores and minerals. Each unit operates separately, permitting beaker removal without materially altering current flow to others. Numerous analyses possible simultaneously at different current densities.

Write for FREE BROCHURE and name of nearest dealer.

NO SEASONAL LAYOFFS ALL SEASON PAYOFFS!

180° SPEED SWING

ALL-PURPOSE MATERIAL HANDLER

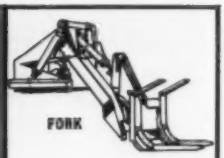
YOU PROFIT with a Pettibone Speed Swing because you never have to lay it off due to seasonal changes or job operation difficulties.

Its amazing *versatility* and *all-around applicability* puts it *on call 365 days a year!* It's always ready and able to handle every call covering a host of different kinds of jobs. In fact, the necessary downtime of a Speed Swing is held to an absolute minimum . . . just long enough for you to make a fast switch to any one of the 10 *quickly-interchangeable* attachments. Then it's off to tackle the next job on your schedule. And this goes on the year around!

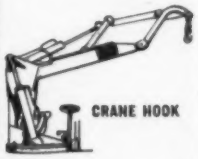
With the *exclusive* Pettibone 180° swinging boom, it handles a score of different materials *faster* and safer because it *swings the load* instead of *the loader.* There's no gee-hawing, no costly, time-consuming maneuvering all over the lot! The Speed Swing works up close to the job with maximum safety, right alongside or in back of trucks . . . out of the way of moving traffic, out of the way of other equipment, out of the way of other workmen—OUT-PERFORMING other material-handling equipment day-in, day-out . . . on job sites of every description!

And, when winter comes, the Speed Swing will remove snow in record time without obstructing traffic. Or load out sand, cinders, or salt products for ice control. The above are just a *few* of the many reasons why the owner of a Speed Swing has *no seasonal layoffs* . . . just ALL-SEASON PAYOFFS!

Learn *all* the reasons why the Pettibone 180° Speed Swing is the *most versatile, most productive* all-purpose material handler for you. Write today!


FORK

BUCKET

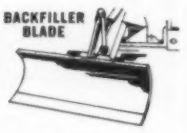

CRANE HOOK

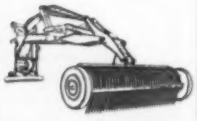
18' BOOM EXTENSION

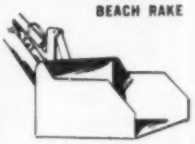
WIRE & PIPE HOOK

BACKHOE

CLAMSHELL


BACKFILLER BLADE


BEACH RAKE


4 CU. YD. SNOW BUCKET

PETTIBONE MULLIKEN CORPORATION

4700 WEST DIVISION STREET • CHICAGO 51, ILLINOIS

(Continued from page 181)

inadequate systems listed a variety of evidences of inadequacy; a tabulation appears on page 181.

Some respondents listed more than one reason, thus the above figures total in excess of the 1934 cities in this category.

Proposed improvement programs represent the bright side of the picture. About 92%, or 2,267 of the 2,463 reporting present or impending inadequacies, are planning remedial changes. The 1,994 communities of the 3,696 that reported adequate systems also planning changes make the picture still brighter. This indicates their intentions to keep system growth ahead of future demands. Water plans of these communities during the next five years include:

Type of Construction	Number of towns
Distribution changes	1,833
New trunk mains	2,949
New or additional supply facilities	2,422
Improvements in water quality	795
Water rationing	283
Metering, rate increases	15
Consolidation, acquisition	33

Many cities listed more than one item, and 1,156 respondents did not itemize planned changes.

While it appears that an indication of inadequacy in a water system should result in some type of improvement program, such is not always the case. The survey replies indicate 183 towns plan no change despite inadequacies in their water systems.

Money represents an important item in any improvement program. Here adequate rates will help solve the problem provided the utility is permitted to apply the revenue such rates produce to its own requirements.

Too many municipalities bleed their publicly owned utility white in the interest of keeping tax rates low. Thus, many utilities must resort to bond issues that could possibly have been avoided or reduced in size, and the result is that vital water bond issues are often voted down. In this connection, 51 communities reported they anticipated resistance to impending bond issues, financial problems or other barriers.

The survey data represents returns from 6,370 communities of 500 to 50,000 population, 36% of all the towns within this population range. The survey response (p. 181) is tabulated by the size of the town.

Many of the respondents volunteered data concerning present and future plans. These remarks give an indication of water improvement programs presently under way or in the active planning stage and are listed in the table on page 181.

While 2,422 communities reported plans for new or additional water supplies, none of the respondents reported a shortage of water sources; nor did the questionnaire specifically ask for such information. However, a pilot study did inquire about the shortage of supply and the small percentage of replies received indicated that sufficient water was available to meet future needs.

A study of the extensive data received indicates that the water-shortage problem so frequently mentioned today does not exist. Officials responsible for this country's water supplies are confident that they can meet future demands provided they are given sufficient authority and funds to develop available supplies and construct necessary facilities to purify and condition the water and deliver it to the customer. ◄◄

CENTRAL STATES

MANHOLE RISER CUSHION

PATENT PENDING

solves manhole cover problems!

ELIMINATES GRINDING AND TEMPORARY FLANGE REPAIRS

STOPS NOISE AND ELIMINATES WEAR

COVER LIFTS OFF FREELY

FOR ROUND OR RECTANGULAR MANHOLES

AVAILABLE IN ALL BASIC STANDARD MANHOLE SIZES

ABSORBS AND DISSIPATES SHOCK

BRINGS MANHOLE COVER FLUSH WITH STREET

PERMANENTLY BONDED TO MANHOLE FLANGE

One-piece metal and rubber... bonded to flange on the job!

STEEL PLATE — RUBBER PAD

Steel plate treated to resist wear and corrosion. Rubber base absorbs and dissipates shock!

Overall thickness brings manhole cover flush with top edge of manhole!

The Central States MANHOLE RISER CUSHION is engineered by rubber experts for proper fit and heavy duty service. The metal face plate is vulcanized permanently to the rubber base for long wear and heavy load impact resistance.

EASY TO INSTALL

1. Clean flange thoroughly with a wire brush. 2. Apply self-curing bonding compound on manhole flange and on rubber side of riser cushion. 3. Place riser cushion on flange. 4. Replace manhole cover. The entire installation can be completed in a few minutes, even with unskilled personnel.

Write for free descriptive folder and prices.

Utilities Supply Division

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Established 1946

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Your Answer: SNOW PLOWS From GOOD ROADS

Rugged snow-fighters.
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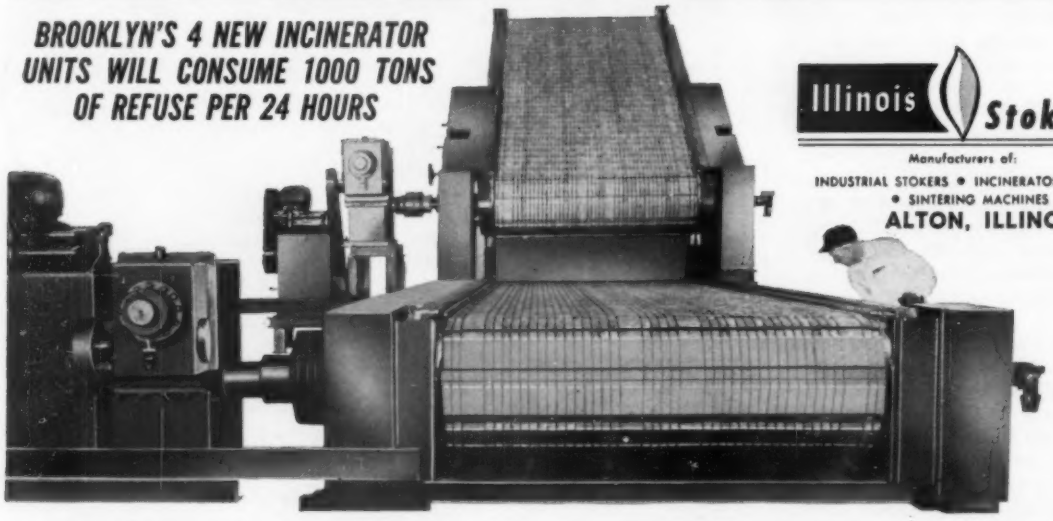
Good Roads GOOD ROADS MACHINERY CORPORATION
MINERVA, OHIO
Manufacturers of Snow Plows, Road Spreaders, Leaf & Litter Equipment

BROOKLYN'S 4 NEW INCINERATOR UNITS WILL CONSUME 1000 TONS OF REFUSE PER 24 HOURS



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This giant bar/key stoker is one of four, custom-designed, for Brooklyn's new Hamilton Avenue Incinerator Plant. The drying stoker measures 8' wide x 22' long; burning stoker, 8' wide x 35' 3" long.

Original overlapping key design prevents jamming and possible damage — reduces sifting of material through grate. Automatic Feed and Continuous Discharge save time and labor.

Illinois Incinerator Stokers built to your Specifications

Supervised Assembly at your Plant

Bar/Key or Chain Grate Models. Sizes to 24 feet wide. Cast iron or cast steel links or keys.

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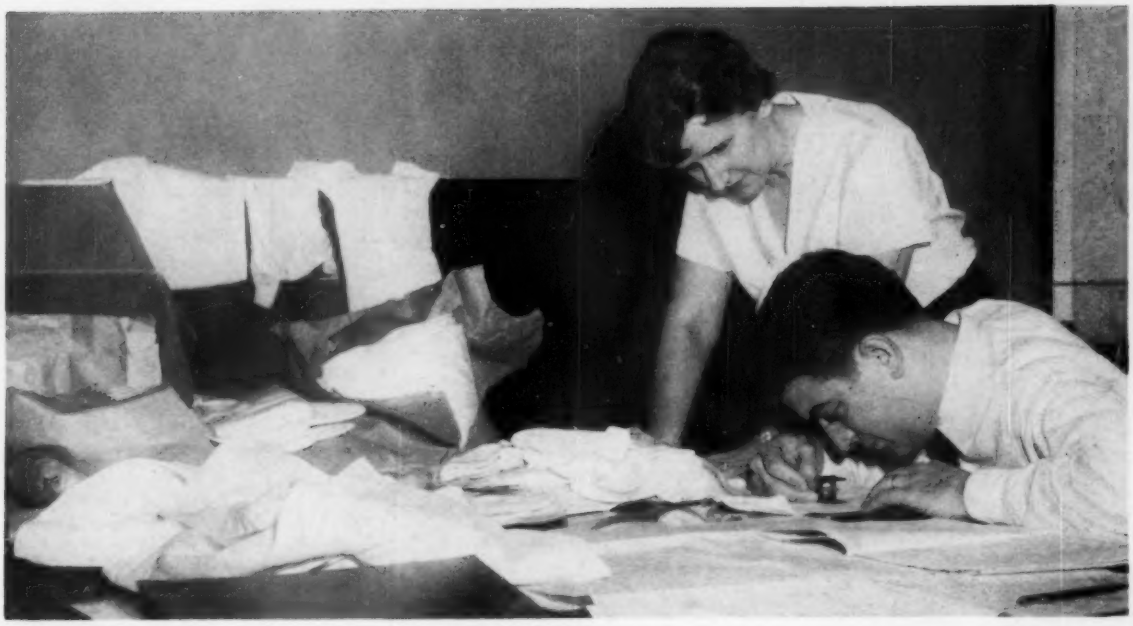

Cincinnati inspectors make thorough tests of a linen purchase to insure that the contract is lowest and best.

When purchasing supplies for a city . . .

It Pays to Shop Around

By **JOHN G. KRIEG**
City Purchasing Agent
Cincinnati, Ohio

That old saying, "you get what you pay for," has a lot of truth in it but this doesn't mean that it justifies lazy purchasing habits. We believe that Cincinnati is *entitled* to get what it pays for and the job of the purchasing agent is to see that Cincinnati does.

Our purchase of air conditioners is an illustration. Competitive bids we received last year varied from $934 to $1,305 per unit. We rejected the low bid for good and sufficient reasons: it did not comply with our specifications nor did it provide a year's free service. We have a little difficulty at times explaining that we do *not* become hypnotized by the low bid. We *do* select the lowest bid *that is in the best interest of the city.*

In this case, the second lowest, $970 less 1% cash discount, was in our best interests. But the significant point was that the highest bid was $1,305 for identical equipment with the same service guarantee. The difference was $344.70 between the second low and the high bids for the same thing.

Take our paint purchases also. Here we saved money by spending more. For several years one of the city departments had been using an inexpensive oil paint on the interior walls of their plant. This paint didn't have much "staying" power and it had to be renewed every year. It took some time to persuade the department head that a better quality paint, costing twice as much and having much more than double the staying power, was in the best interests of the city. After all, the cost of the paint is much less than the labor cost of applying it.

We customarily buy all paints on the basis of performance. For example, to purchase traffic paint, we first apply samples to one of our heavily travelled streets and inspect them for a period of five months. Many of the paints fail this test and are not accepted, regardless of price. We also purchase house paint, wall paint, guard rail, metal and similar paints on the basis of samples applied to surfaces on which they are to be used.

On a purchase of traffic-signal controllers, we received bids per unit of $405.70; $446.80; and $505. In this case we accepted the low bid since each bidder offered an identical manufacturer's brand.

As the result of finding a new source of supply, we are able to purchase efficiency kitchen units for the police stations at a 21% savings.

Occasionally bidders make mistakes. The low bidder on hauling and laying of water mains claimed an error and filed suit to enjoin the city from awarding him the contract. The court granted relief on the basis of proven error and on assurance that if the purchasing agent would readvertise, he would guarantee not to rebid higher than his corrected bid and would remunerate the city for the cost of readvertising.

Other contractors of course had the opportunity of knowing his

(Continued on page 186)

Mr. Krieg will supply more detailed information about specific items purchased by any governmental purchasing agent requesting it.

(Continued from page 185)

original bid and the error recognized by the court. Consequently, to avoid being underbid, he offered to perform the contract at a new low quotation. The net savings to the city was over $2,000.

Sometimes one saves by persuading the requisitioning agency to be a little flexible in its requirements. Last year we solicited bids for 2,700 specially constructed and specially furnished concrete blocks for use in forming tree boxes for a certain street improvement. For this, we received only one bid of $0.283 per block.

We prevailed on the requisitioner to consider a standard 4x4x16-inch concrete block and received a bid of $0.11 less 5% discount.

Occasionally the city gets something for nothing. Last summer a supplier had to remove some stock from a warehouse or pay another month's rent. To avoid the mechanics of a quotation and certification of an order, he told us we could have the shipment gratis, if we would pick it up at the warehouse the next day. The stock was 232 cases of an all-purpose detergent.

Unusual Purchases

Each year we get requests for unusual purchases. Last year we bought for the police department a submersible drag to recover bodies, boodle buggies (collapsible baby buggies), movable plastic eyes, Indian headdresses, a trampoline.

Since we do not purchase for the zoo, a requisition for 25 pounds of mynah bird food seems unusual. However, this food was purchased for a mynah bird housed by the park board in its Burnet Woods Trailside Museum. Since mynah birds must eat, the purchasing department buys mynah bird food.

We received an emergency requisition from the General Hospital for special surgical instruments for a "first" in surgery—the insertion of a plastic ear-drum in a patient, with the operation to be witnessed by surgeons all over the country.

In one day we may purchase milk for babies at the General Hospital and beer for Daddy after a round of golf at one of the Municipal golf courses.

When bids were solicited on a "Sherlock Holmes" game, an ingenious bidder offered an "Alfred Hitchcock" game as a substitute.

This year the Police Department adopted the policy of using German Shepherd dogs in their police work. The men and the dogs were trained together in St. Louis, and when the time came for both men and their escorts to become lifetime companions, it was incumbent that we provide kennel facilities on the property of the two men to house these dogs. After soliciting bids in the usual manner, we placed orders for the construction of 9x9-foot kennels and a special type of dog house for these new members of the City's Police Department. This was another "first" for us, or the tale of the dogs. ◄◄

Industrial Parks

Planned industrial districts are essentially a post-World War II phenomenon. Over 80% of those reported were established after 1949 and 60% date from 1955 or later. About 40% of the districts in the survey are located in metropolitan areas of 1,000,000 or more people and another 31% in areas of 100,000 to 1,000,000.

Lack of available land, high land-assembly costs, traffic congestion, and blighted conditions in central-city areas have resulted in most industrial districts (especially recent developments) locating in suburban areas, usually within ten miles of the central city.

Most industrial districts have areas 100-200 acres; over two-thirds of the districts studied are between 50 and 500 acres.

Accessibility is a primary consideration in the location of industrial districts. Nearly all the district studies are either adjacent or in close proximity to major highways (including urban beltways) and over 90% are served by rail.

The development of an industrial district requires a long-term outlook. Land absorption progresses at a much slower rate (averaging between 10 and 15 acres per year) than in shopping center and residential developments. Consequently, it is imperative that the developer give careful consideration to flexibility of district layout, development costs, taxes and financing.

Five major groups sponsor industrial districts. In order of importance they are: private real-estate developers, railroads, private local-community groups, government-sponsored groups, and joint government-private local community groups.

There is a relationship between sponsorship and certain district characteristics. For example:

Districts sponsored by private real estate developers (and other profit-

NO UPKEEP!

NEW ALL-ALUMINUM CHAIN LINK FENCE

No painting—virtually no upkeep! New high-strength alloys mean fencing that stands solid and handsome through the years!

Aluminum Chain Link is specified for more and more industrial plants, highways, parks, playgrounds...because you save so much on maintenance.

For more information call your Anchor Man. For free catalog write to Anchor Fence, Dept. AC9, 6661 Eastern Ave., Baltimore 24, Maryland.

ANCHOR FENCE made of REYNOLDS ALUMINUM

Watch Reynolds TV show: "HARRIGAN AND SON," Friday evenings, ABC-TV Network.

motivated sponsors) show the greatest affinity to large urban areas, while community-sponsored districts account for the majority of the developments found in smaller communities of less than 50,000 population.

The largest districts are those sponsored by port authorities while the smallest are those sponsored by redevelopment authorities.

Districts sponsored by community-development groups house a higher ratio of manufacturing to non-manufacturing establishments than do districts sponsored by private real-estate developers, railroads, and other profit-motivated developers.

The most frequently recurring occupants of industrial districts are distribution facilities and light manufacturing and assembly plants requiring sites of one-half to five acres and buildings of 10,000 to 25,000 square feet. Rarely will a firm requiring a site of more than 25 acres locate in a planned industrial district.

There is a direct relationship between site depths, the amount of gross area lost to streets and easements and development costs. The shallower the site depths, the greater the loss of gross district acreage, and the higher the development costs. As a rule, a developer can expect to lose between 10% and 25% of gross area to rights-of-way and easements.

Coverage of individual sites by buildings is relatively low, usually ranging from 20 to 50 per cent in contemporary districts, and ultimate coverage infrequently exceeds 60 per cent. In general, the older the district, the greater the pressure for land and the higher the site coverage.

There is a relationship between type of district occupant (manufacturing vs. non-manufacturing) and certain land use and employment characteristics. For instance, manufacturing establishments in industrial districts usually require larger sites, utilize a smaller proportion of their total site area for buildings, employ more workers per plant and exhibit lower employee densities per site acre than do non-manufacturing establishments.

The foregoing is based on a study of industrial districts prepared by the Urban Land Institute, 1200 18th St., N. W., Washington 6, D. C., and published in Technical Builetin #41; the price is $5. ◄◄

HEAD AND SHOULDERS ABOVE THE REST!

FORTEX PAILS

Most Durable and Safe All-purpose Pail. Resists extremes of heat and cold, won't crack or dent . . . resists effects of acids, caustics, cement, chemicals, detergents, fuels, paints, plaster. Seamless. Subdues Noise. No sharp metal edges. Makes all other pails old-fashioned.

Complete line of standard sizes up to 10 gallons.

Write for quantity prices.

"Reinforced Molded Rubber-Fiber Pails for Every Purpose"

FORTEX INDUSTRIES, INC.
44 WHITEHALL ST., NEW YORK 4, N. Y.

HOTTEST STREET PATCHER IN TOWN

the Original

HEATED *Asphalt Rollers*

5 TON COMPACTION — WATER-TIGHT SEAL

OVER 300 CITIES REPORT, "HOT ROLL is the **major advancement** in recent years for asphalt street repair"!

WRITE FOR A DEMONSTRATION TODAY!

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P. O. Box 168
Liberty, Missouri

"...on safer grounds with Anchor Fence,"

says O. C. Hufziger, Assist. Supt. in Chg. of Business, School Dist. of Pontiac, Mich.

"We wanted fencing to fill a number of needs at three schools in our district. An older Anchor installation and the cost-saving advantages of the new fencing convinced us we were on safer grounds with Anchor Fence. And we have been. It keeps children in the schoolyard, out of school driveways. It backstops a softball field at one school, encloses tennis courts at another. In fact, with its low-cost maintenance and high standard of quality, I'd recommend Anchor Fence to any other school district—with confidence."

Call your local Anchor office today for a talk with one of Anchor's trained sales engineers. For our free catalog, write: ANCHOR FENCE, 6567 Eastern Avenue, Baltimore 24, Maryland.

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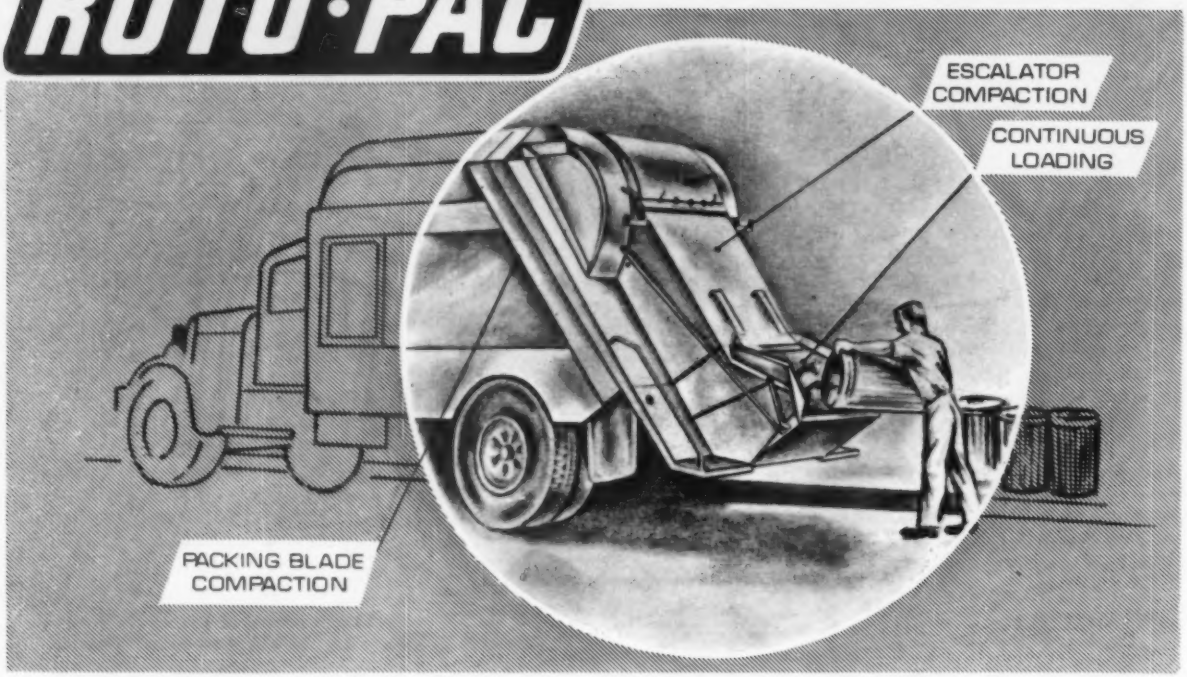
Division of ANCHOR POST PRODUCTS, INC.

Plants in Baltimore, Md.; Houston, Texas; Whittier, Calif. Sold direct from factory branches in principal cities.

ROTO·PAC



THE REFUSE COLLECTION BODY THAT'S **FIRST IN EVERYTHING** THAT COUNTS!

SPEED..... ROTO-PAC alone has CONTINUOUS LOADING! This means MORE LOADS PER DAY than any other loader in the field. There are no "dead periods" where crew members must stand idly by waiting for blade mechanism to finish cycle. No need for "positioning" of refuse by hand ..... ROTO-PAC'S full length 75 inch loading width permits maximum freedom for fast FULLY AUTOMATIC LOADING!

SIMPLICITY. ROTO-PAC'S controls are simple. There's no complicated maneuvering of levers and plungers. Any crew member, regardless of skill, operates ONE LEVER to start, stop, or reverse action in the ROTO-PAC HOPPER.

EFFICIENCY. ROTO-PAC has CONTINUOUS MAXIMUM COMPACTION. This means MORE POUNDS OF REFUSE PER LOAD than any other packer in the field. Approximately 40 crushing actions per minute by the escalator flights PRE-CRUSH refuse as it is taken into the body, resulting in a minimum of empty space in the body load. Only ROTO-PAC has the loader and compactor do both jobs at the same time by acting as a SINGLE UNIT. Separate loading and packing cycles are eliminated.

ROTO-PAC CONTAINER SYSTEM.... ONLY REAR-END LOADER THAT HANDLES CONTAINERS FROM 1 – 6 CUBIC YARDS.

WRITE FOR FREE BROCHURES TODAY!

Product of

CITY TANK CORPORATION

Box 711
Culpeper, Virginia

A Subsidiary of Hagan Industries, Inc.

South Bend's new vacuum unit makes quick work of removing litter from the street.

Large debris collects in a nylon bag while dirt and sand drops to the bottom of the storage compartment. The cyclone-type collectors mounted at the rear of the unit remove the dust.

South Bend Vacuums for Light Litter

. . . and releases a heavier sweeper for other duty

South Bend, Ind., is applying the vacuum principle to street sweeping with success. Empty cigarette packages, cigarette butts, paper wrappings and even an occasional beer can carelessly or unconsciously thrown out of car windows or dropped by pedestrians were causing a problem. A stepped-up street-cleanliness drive had the city's sweepers covering approximately 114 curb blocks of the downtown section seven nights per week. But this meant considerably more wear on the main and gutter brooms. Anxious to cut costs, officials investigated the new City Slicker made by Tarrant Mfg. Co., 23 Jumel Place, Saratoga Springs, N. Y., and following a demonstration purchased one unit in August 1960.

The Tarco Model CS-1 covers the same downtown section on alternate nights, picking up the bothersome litter deposited daily. Since there are no brooms on the machine, a savings in material has been accomplished; with a bonus of cleaner streets than was previously possible. After one year of operation, Commissioner Dan W. Richardson is convinced that this equipment is the answer to many problems.

The nimble, jeep-mounted unit uses a combination of vacuum-air blast to sweep a 6½-foot-wide path. A large, open-mesh nylon bag captures the light, bulky litter while sand and dirt falls through the bag to the bottom of the litter compartment, which can be cleaned by a water hose. Two mechanical separators separate and trap the dust into quickly emptied compartments. The compact, one-man unit is safe and easy to use in heavy traffic.

Adjunct Unit

South Bend operates a fleet of seven demountable hopper-type sweepers, one small patrol sweeper, and one truck-mounted or four-wheel unit, but does not intend the Slicker as a replacement for any of these broom machines. Richardson finds that the vacuum unit is more of an adjunct to present sweeping operations and releases one of the heavier machines for duty elsewhere.

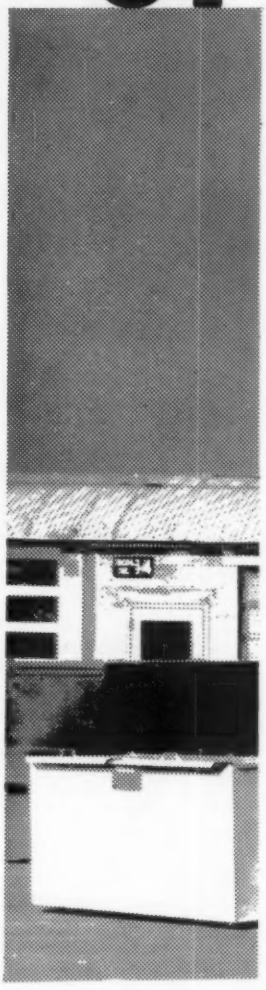
The Slicker is also a trouble shooter. Parades or a large gathering of persons always results in an increase in the amount of such litter as paper cups, napkins, ice cream wrappers, etc. Here the Tarco unit is at its best. The speedy machine negotiates a parade route at slightly less than normal driving speed and efficiently picks up the residue. It has also been found that in the colder northern Indiana climate sweepers using water to allay dust must cease operations when late fall temperatures hover around freezing. The Slicker, using no water, can operate effectively until the snow flies. South Bend developed another operation for the vacuum machine in the early fall season when thousands of yards of leaves are removed from the streets. The Slicker follows up the leaf crews and speedily vacuums up the powdery leaf dust and other debris that may not have been picked up by the leaf-picking machines.

Its public relations value cannot be estimated. Local citizens are pleased to see the new operation work so effectively and swiftly.

Street Department officials are especially pleased with the steady operation of the machine. Since broom changes are not necessary and moving parts are at a minimum, the "down time" has been negligible and its transportation to and from a specific work area is as swift as a normal passenger car.

According to Richardson, South Bend's late Mayor Edward F. Voorde and present Mayor Frank J. Bruggner, who was then city controller, were quick to see the possibilities in vacuum as an auxiliary to street sanitation operations and were instrumental in the purchase of the City Slicker. Street Department officials have been more than pleased with its performance and are continually finding new uses for it. ◄◄

A Question of



Does the annual cost of equipment consist of initial price, plus total maintenance and operational costs, divided by the number of years it retains its efficiency? If you think it does, consider that the average age of our equipment in service is over 10 years . . . with many pieces still efficient after more than 25 years...and it seldom looks its age! Strength . . . long life and low maintenance are "built-in" plus features of everything we make.

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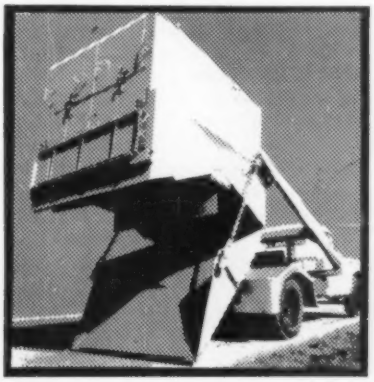
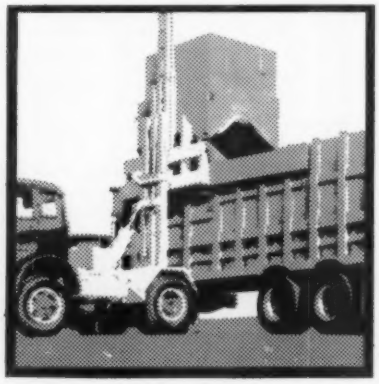
DEMPSTER-DUMPSTER



SUPER DEMPSTER-DUMPMASTER

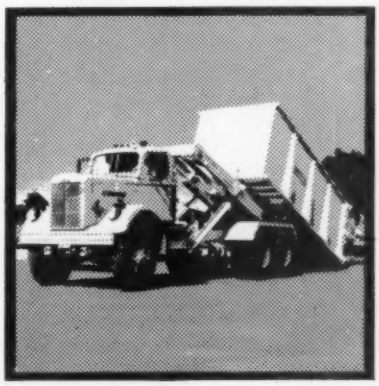
DEMPSTER Compaction TRAILER



LONGEVITY...

DEMPSTER-DUMPMASTER

DEMPSTER-DINOSAUR



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Official Texas State Highway Department records give the facts: Since 1929, road maintenance costs per mile per year for concrete have averaged $144.68; for asphalt, $235.23. Texas' new concrete highways will do even better!

PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete

Substation Fire-Alarm System For Memphis

By **E. A. HAMILTON**
Fire Chief

The City of Memphis, Tenn., has signed a contract with the Shelby Electric Co. of Memphis, in the amount of $1,592,015, for furnishing and installing a new fire-alarm system for the city. This new system replaces the existing system, which was originally installed in 1916 and modified in 1926. All original equipment, including that added in 1926, was manufactured by the Gamewell Company. It is a manually operated "Type A" system using telegraph fire-alarm boxes.

William B. Thompson, a consulting engineer retained by the city, prepared the plans and specifications for bidding on an open competitive basis.

Six bidders responded; four for conventional telegraph systems, one for a telephone system on a direct sale basis and one for a telephone system on a rental basis.

After analysis by both the consulting engineer and the city comptroller, the Shelby Electric Company's low bid on a direct sale basis for a telegraph system was accepted by the City Commission.

The new fire alarm system under this contract is a conventional Gamewell telegraph system of the substation type. The city is divided into seven substation areas with central-office equipment located at the fire-alarm headquarters in the new centrally located Armour Fire and Police Training Center Building. Each substation area will have its own complete system and a tie-line extending to the central-office equipment located at headquarters.

The fire-alarm central office will be "Type A" manual with an operating console. It will provide for:

a. reception of fire-alarm-box signals from the central-office area and all substation areas;

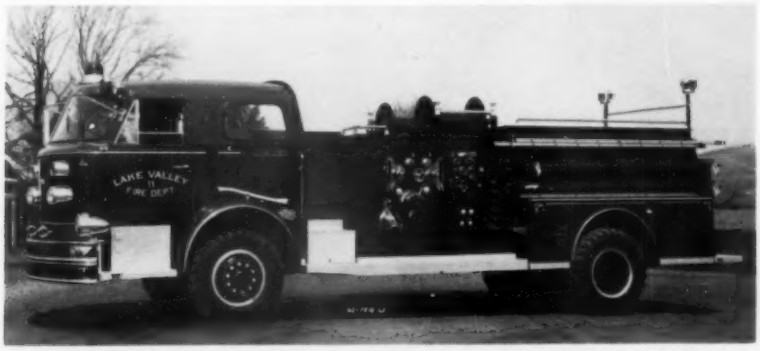
b. reception of alarms reported by telephone;

c. manual transmission of coded alarms to engine companies on a selective or all-inclusive basis;

(Continued on page 195)

Low-Slung, All-Wheel-Drive

The Lake Valley Fire Protection District, Lake Tahoe, Calif., now has three all-wheel-drive fire trucks. These units, American LaFrance model Spartans, are distinguished by their low centers of gravity. They use a 330-hp engine to provide extra power in high-altitude operation. The pump on each provides pressures to 600 psi in addition to Underwriters rating. Each truck carries a 750-gallon water tank, 1,200 feet of 2½-inch hose plus 900 feet of 1½-inch hose. ◄◄



A big engine (330-hp) insures fast, reliable operation in the high-altitude area of Lake Tahoe, Calif.

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CURB BOXES

- Easy to Locate
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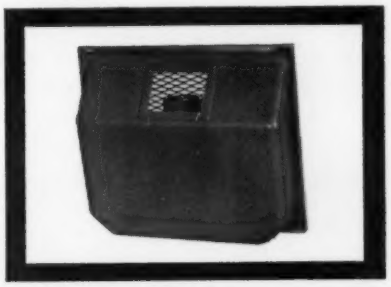
- Lifetime
- Light Weight

Extension type, telescope fully. Made of resin-rubber compound* to last a lifetime. Equipped with permanent magnet. Easy to locate with either electronic or magnetic finders. 5 models available, each in a complete range of lengths.



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Can be serviced from outside. Ends call backs. Won't rust or corrode. Models available for slab floors and homes with basements.

ROADWAY VALVE BOXES
Telescope to reduce damage by vehicles to valves and mains. Made of lifetime rubber-resin compound*. Cast iron lid and flange. Boxes are light, easy to handle and install.

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*A.B.S. Polymer U.S. Patent No. 2,931,383

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Boyertown Delivery Truck Bodies

Model MH Merchandiser Equipped for Combined Service as Equipment Carrier and Rescue-Ambulance for a Fire Company.

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More efficient operation of Municipal services is assured with the use of "Better Built" truck bodies. Functionally designed and built with a full square usable loadspace ideally suited to the demanding variety of needs of Fire, Police, Water, Maintenance Departments—nearly every type of community mobile need.

Boyertown truck bodies, built of all High Strength Alloy Steel providing more strength, having less weight and greater resistance to corrosion means longer lasting, top value equipment.

Body features, service proven by many Municipal Governments and Authorities, include full square usable loadspace, easy access to load from cab or rear doors, large cab working area, and unitized body frame construction permitting fast, firm installation of special tools, equipment or fixtures within the loadspace. Sectionalized body construction permits fast, easy replacement of damaged parts by local service departments or garages.

Whether you buy or lease, contact your Boyertown Sales Engineer located in principal cities or your truck dealer on how Boyertown truck bodies will serve your needs best!

***Model MH Merchandiser,** Available with 8′ to 18′ Loadspace Lengths, Equipped for Special Police Duty.

Model MH Merchandiser Serving a Water Bureau as a Mobile Maintenance and Repair Shop covering a 60 Sq. Mile User Area.

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AUTO BODY WORKS, Inc.
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(Continued from page 193)

d. a Vocalarm system for two-way voice communication between the central office and each of the engine houses, the salvage corps and the maintenance shop.

This equipment will also provide automatic facilities for the permanent recording on tape of all in-coming fire-alarm signals and all alarms manually transmitted to engine houses. It also provides facilities for automatically recording all in-coming telephone alarms, all Vocalarm transmissions and all radio communication and will provide thereon an automatic time announcement at the end of each voice transmission.

Each substation will have a self-contained, automatically operative control cabinet to receive and announce visually and audibly, and record alarms from its local box circuits and repeat them to the central fire-alarm office. Also each substation can receive and announce visually and audibly alarms from the central fire-alarm office.

The new system provides alarm-circuit connections between the central alarm office, 27 Fire Stations, the salvage corps and the maintenance shop. Each of these locations will receive coded alarms from the central-alarm office and, in addition, will have two-way voice communication with the alarm office by Vocalarm.

A total of 786 fire-alarm boxes will be installed throughout the city at locations specified by the Memphis Fire Department. Of these boxes 172 will be master type with direct connection to the local alarm systems within important public buildings, schools and hospitals. All fire-alarm boxes will be of the positive non-interfering and succession type, arranged to permit the simultaneous operation of several boxes on a single circuit. Under such conditions, one box will take control of the circuit and transmit its signal. The others will run idle until it is their turn to transmit their signal to headquarters. Fire-alarm boxes in high-value areas will be equipped with flashing lights so as to make them conspicuous during hours of darkness.

Wiring will be mostly underground utilizing existing telephone ducts and manholes. The small percentage of overhead construction will, as far as possible, be provided on existing poles of the local electrical utility and telephone company. In addition, 125 new poles will be installed by the contractor.

Underground cable will be lead-alloy-sheathed multi-conductor I.M.S.A. specification No. 16-1, using #14 single-conductor signal circuits and #16 twisted-pair communication circuits, with all conductors individually latex-insulated. The cables will range from four-conductor to 108-conductor.

Overhead cable will be Neoprene-sheathed electrically shielded I.M.S.A. Specification No. 16-5. They will be of the pre-assembled self-supporting type supported by a copperweld messenger cable.

Overhead line wire for open wire circuits on pole construction will be 40%-conductivity copper-covered steel with Neoprene covering in accordance with I.M.S.A. Specification No. 28-2.

When completed, the citizens of Memphis will have every right to be proud of their modern alarm system. It will incorporate the latest features which have been developed through the years by the fire-alarm industry. Many of the features are based on recommendations and experiences of top-rated fire fighters and fire-protection engineers. ◄◄

Bright New Star on the Sweeper Horizon
The All-New Wayne STARSWEEP 1054!

Wayne—world's leading name in sweepers—presents the super-rugged, powerful new **STARSWEEP 1054** . . . *the most important advance in Power Sweeping ever made!* This husky, compact, maneuverable, built-to-last beauty has every feature you've ever wanted . . . exclusive *job-engineered* features that make Power Sweeping pay for itself as never before! With its 62" sweeping swath and 16 cubic foot hopper capacity the **1054** is the biggest Power Sweeper made. You sweep the biggest areas—acres outside and miles of aisles inside—with ease and speed. **STARSWEEP'S** exclusive new hydra-mechanical drive provides both *infinitely variable* travel speeds (0 - 12 MPH) and *constant* broom and vacuum blower speeds for super-efficient sweeping. Full-floating main and hydraulically driven side brooms adjust automatically to every sweeping condition. 54" expandable main broom can be changed in minutes *without tools*. **STARSWEEP'S** exclusive new Filter-Vac enclosed dust control system with huge 78 square foot filter area provides the ultimate in dust-free operation under all conditions . . . disposable filters are cleaned with the flick of a lever. Convenient automotive controls assure quick, safe, efficient and comfortable operation. There is so much *more* to tell . . . *more* in sweeping ability, performance, economy, dependability, local parts and service. Get the facts. See and compare. Find out for yourself how the **STARSWEEP 1054** can save you time and money. The full story is yours for the asking. Mail the coupon today.

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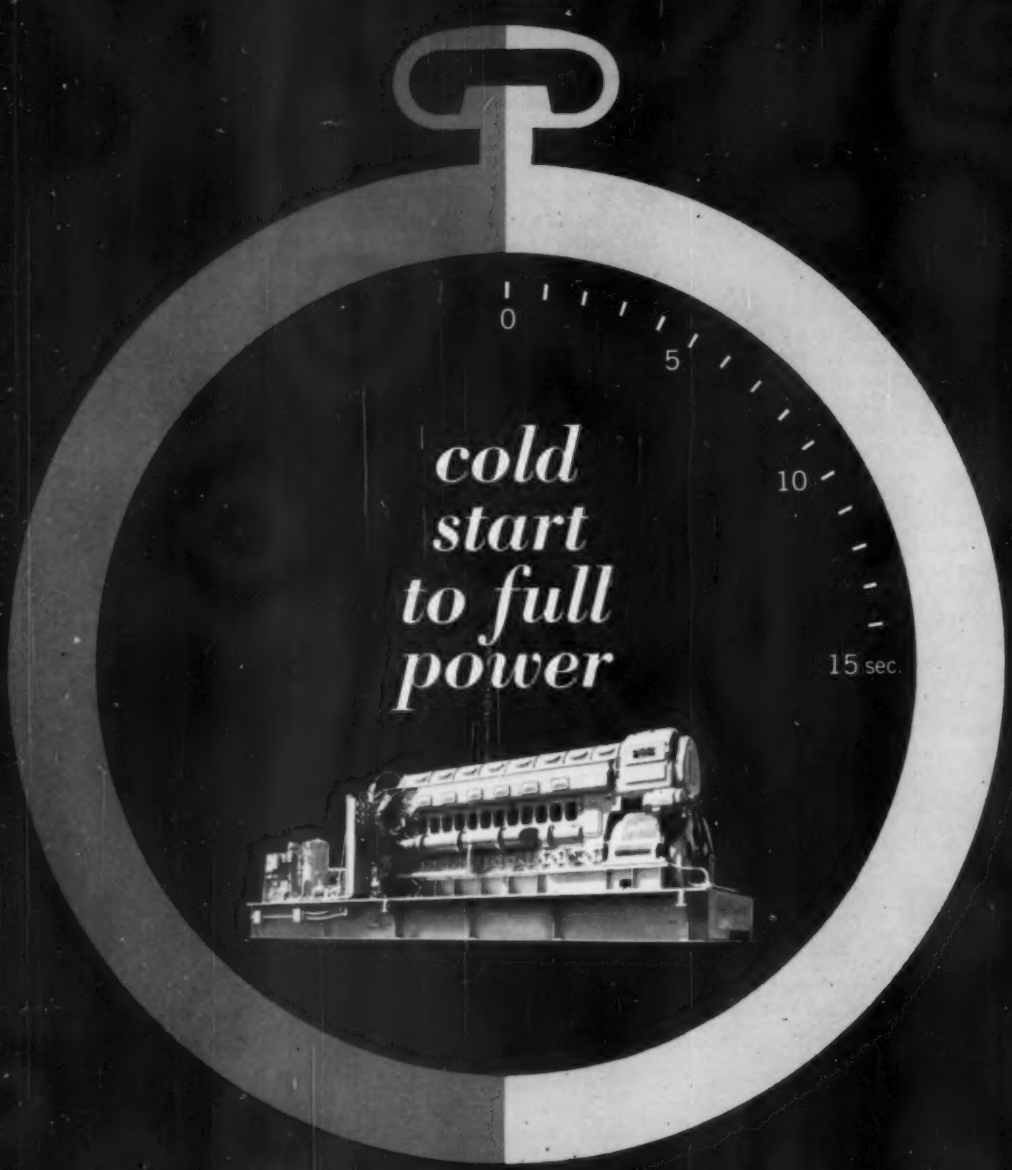
You are invited to visit our booths A-19 and A-20 at the 1961 APWA Congress in Minneapolis, September 24-27.



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The F-M 38D8⅛ Opposed-Piston Diesel Generating Unit—with only 15 seconds *from cold start* to full power—gives fast, sure power for peaking or for standby use, together with impressive operating economies.

This unit requires no spinning reserve . . . uses no power until it starts, then produces up to 2500 kw per unit. Can be linked in multiple units.

Dependable? Service records of F-M Diesels prove dependability beyond a doubt (F-M pioneered the manufacture of diesels in America . . . has kept in the forefront ever since.)

Economical? The 38D8⅛ has 40% fewer moving parts than comparable engines of equal horsepower. This means reduced maintenance costs . . . fuel and lube oil savings.

Opposed-piston design minimizes vibration, produces fine balance . . . smooth power and instant response that result in 15 second full-power operation. Available with 4, 5, 6, 8, 10 or 12 cylinders, ranging from 450 to 2500 kw per unit, with automatic or manual controls. **For full details or custom specifications, write today to: S. K. Howard; Director of Marketing; Fairbanks, Morse & Co.; Beloit Division; Beloit, Wisconsin.**

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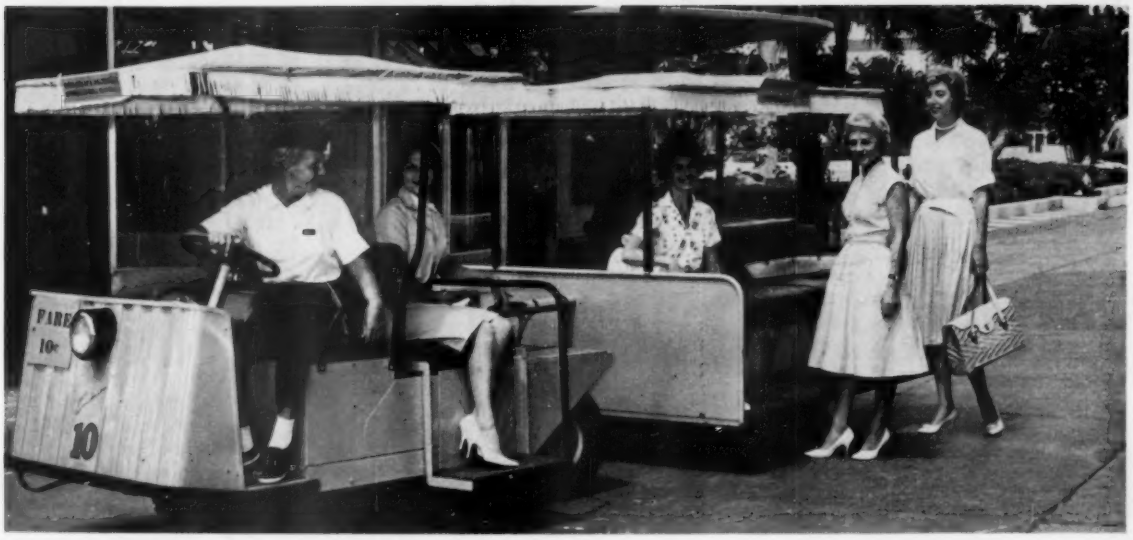


This fringe-topped, electric-powered tractor-trailer aids shoppers and sightseers on Miami Beach's Lincoln Road Mall.

Miami Beach Mall Gets Surrey Transit

. . . to add interest to this exotic and financially successful shopping attraction

Gay little trams with a fringe on top are bringing fringe benefits to Miami Beach's Lincoln Road Mall.

Lincoln Road Mall's exotically landscaped length stretches for some eight blocks, lined on either side with shops. Pedestrians may stroll the length of it, enjoying the flowers and fountains as well as the shop windows, as they go along.

Or, if they want to save time or just believe in taking it easy, they may hop onto a little awning-shaded electric tram and ride to the store of their choice. Rides are only 10 cents.

At the opening of the Mall last November, only two trams were in operation. The fleet has gradually grown to 13, running at frequent intervals between the hours of 9 a.m. and 11 p.m. On peak traffic days, such as last Easter Monday, they have carried considerably more than 2,000 passengers a day. They were taxed to capacity in June when more than 50,000 Shriners visited the area for their national convention and overran the Mall.

The trams are a private operation under a permit from the City Council, following receipt of bids for the services.

The attractive little vehicles are actually Cushman model 734 Trucksters customized for use on the Mall, complete with ten-passenger trailer. The three-wheel Truckster is powered by a 2.5-hp, 36-volt-DC traction-type motor that provides a smooth, moderately paced ride. Electric power is well-suited for operation close to pedestrians because it is quiet and creates no exhaust heat or fumes. The unit can pull its two-wheel tram for 50 miles between battery rechargings.

The tram rides give the final fillip to Lincoln Road Mall itself, which is a $600,000 experiment in glamour as an aid to business.

Closed to lengthwise automobile traffic, Lincoln Road for the length of the Mall has been turned into a colorful promenade. The tropical and sub-tropical landscaping varies from block to block, interspersed with fountains and shelters and set off at night by special lighting.

Lincoln Road property owners instigated its development and the construction costs are assessed against them. Naturally, the most frequently asked question is, "Has the Mall paid off as a stimulus to business?"

The answer seems to be "Yes." Though the Mall was completed at a time when the Greater Miami area as a whole was feeling the pinch of a general business depression, reports from Lincoln Road Merchants indicate that their business has improved since the Mall was established, in spite of the downward trend evident in the area as a whole.

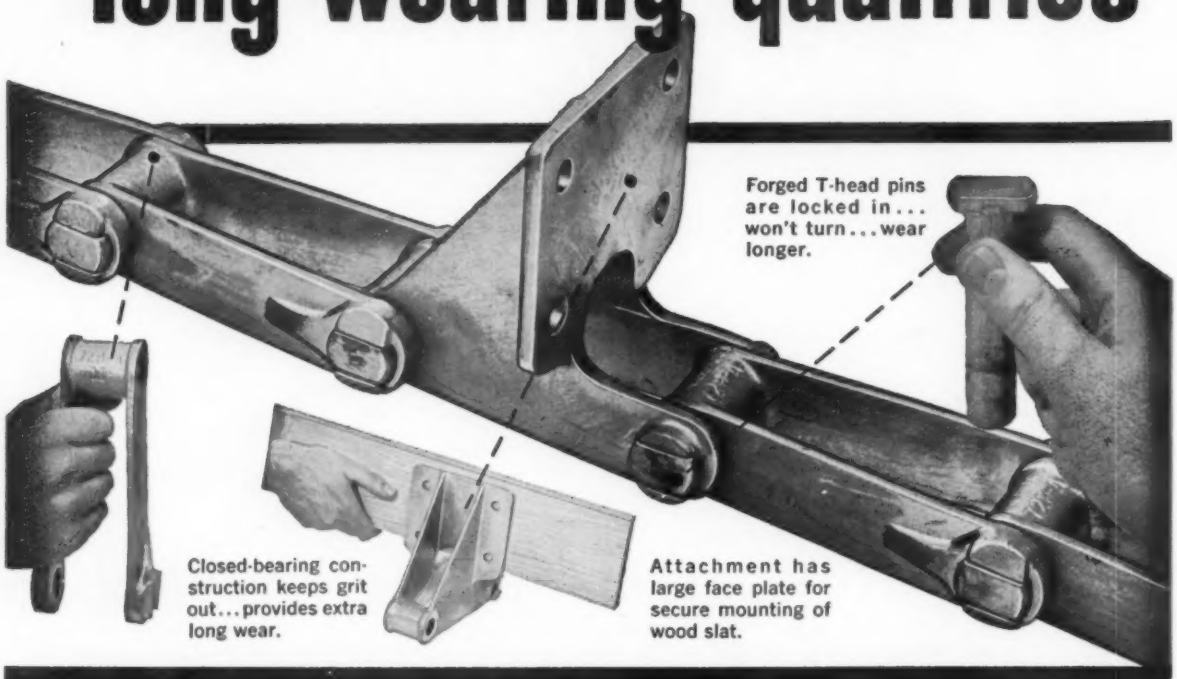
The Mall was opened to the public on November 28, 1960. The first official survey of the Mall merchants was released on January 16, 1961 by Ted Greenfield, then executive director of the Lincoln Road Mall Association.

It showed that five of the 14 stores polled showed a definite increase in their December business, over the previous December. Six had slight increases; six broke even; three had a slight decrease.

The report for March was even

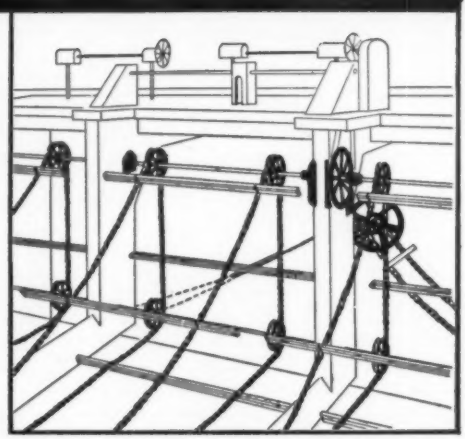
(Continued on page 199)

Why Moline long pitch pintle chain has long wearing qualities


Forged T-head pins are locked in... won't turn... wear longer.
Closed-bearing construction keeps grit out... provides extra long wear.
Attachment has large face plate for secure mounting of wood slat.

For a serviceable, long wearing chain at a moderate price, sewage treatment plants prefer Moline Long Pitch Pintle Chain. It is designed and proportioned to provide great strength at minimum weight... is stronger than detachable chain and less subject to wear. Moline Pintle Chain is assembled with forged T-head pins with cotters. This construction prevents the pins from turning... prevents the entrance of grit... minimizes wear. Special analysis metal with superior corrosion resistance is available in this chain.

Write for information and prices or phone your local Moline representative.



LEADERS FOR 60 YEARS

Moline MALLEABLE Chains

MOLINE MALLEABLE IRON CO.
St. Charles, Illinois
Specializing in the Manufacture of Chains

(Continued from page 197)

more encouraging, showing, according to Greenfield, sales up five to ten per cent over the previous March; this is again a high figure considering general business conditions.

For another test, a pedestrian count was taken in April 1961. This was compared with the pedestrian count taken on a comparable day in 1960. The 1961 count showed a 50% increase in pedestrians. It is a fair assumption that one in every three persons had been attracted by the development of the Mall.

All this is encouraging to the Lincoln Road property owners, whose idea it was in the first place. Funds for construction were advanced by the City of Miami Beach, through the sale of general-obligation bonds. Construction costs are to be assessed to 59 property owners of 65 parcels of land along Lincoln Road. They will pay over a ten-year period the cost plus interest on the unpaid balance.

This was more easily said then done. It required a vote at a general election to amend the city's charter to permit the construction of malls on city streets and make such construction assessable. It required a freeholder election to authorize the sale of general-obligation bonds in the amount of $600,000 to raise funds for the construction of the Mall. Costs of this election were paid by the Lincoln Road Property Holders Association.

It required a full-scale educational and "get out the vote" campaign on the part of the Lincoln Road Mall Committee to gain public acceptance for the charter amendment and the bond issue.

It required, overall, several years of planning and working before the Mall finally reached the construction stage.

At this point, the City of Miami Beach maintained the role of prime contractor and coordinated all phases of construction through the engineering department. The bonds were sold on July 20 last year. Work began immediately and the job was completed within four months. ◄◄

3.4% More Driver Licenses in 1960

A total of 87,400,000 motor-vehicle operators' licenses were in force in the United States during 1960. The estimate, prepared by the Bureau of Public Roads, U. S. Department of Commerce, from reports received from state agencies, was 3.4% higher than the 84,500,000 during 1959. There were 1.20 licensed operators per registered motor vehicle.

Operators licenses are issued for varying periods of time by the states. In 23 states, licenses are issued for two years; but six states issue them for one year only, ten states for three years, six for four years, and one for five years. Five states have varying or indefinite licensing periods. Because of this variation only a part of the driving population obtain license renewals in any one year and the total licenses in force must be estimated from data reported for the current and previous years.

California led the states in 1960 in numbers of licensed motor-vehicle operators, with 8,700,000, followed by New York with 7,100,000 and Pennsylvania with 5,800,000. Illinois, Michigan, Ohio, and Texas each had over 4,000,000. These seven states accounted for 45% of the national total. These were also the seven leading states in 1960 in motor-vehicle registrations and motor-fuel consumption, although not in exactly the same ranking order. ◄◄

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BUILT by LOCKWOOD

The BEACH CLEANER can clean your beaches of debris—moving under the surface to a depth of 1 to 6 inches, it gathers cigarette butts to items 12 inches in diameter.

SELF-PROPELLED BEACH CLEANER OFFERS THESE FEATURES:

- FORD INDUSTRIAL ENGINE
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BOTH VOTERS AND ELECTION OFFICIALS CAST THEIR VOTES FOR . . .

A *NEW* CONCEPT IN VOTING MACHINES!

Seiscor Voting Machine Shown Without Curtains

Before placing its new voting machines on the market, Seiscor ran a full-scale "field test" in conjunction with the November general election in Tulsa, Oklahoma. The results confirmed everything our engineers had told us: the machines were easier to use, easier to tabulate, easier to move and store, and won the overwhelming approval of voters and election officials alike. Here are just a few of the comments gleaned from the "Voter Opinion Card" survey taken at the time:

"As a worker on the election board, I say 'Wastes no time . . . it's our best find . . .'"
. . . precinct official

"Simple and uncomplicated — I like it."
. . . voter

"I am acquainted with all types of voting machines now being used and am convinced this is the best."
. . . voter

"I have voted on machines in Pennsylvania and Indiana. This machine is much simpler, more compact and looks a lot nicer. It should pay for itself in a short time."
. . . voter

"Voting machines are essential today. This is the best one I've seen. Surely we'll be allowed to have them soon."
. . . voter

"My chief concern was maintaining the secrecy of the ballot. You have protected that."
. . . voter

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Gentlemen: I am interested in a voting machine that weighs less, costs less and is easier to handle and supervise. Send information at no obligation to:

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CIVIC TITLE OR BUSINESS_____
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SEISCOR

A DIVISION OF SEISMOGRAPH SERVICE CORPORATION
BOX 1590 • TULSA, OKLAHOMA

MEMO September, 1961

TO: Mayors and City Managers

SUBJECT: "United Nations Day" in Your Community

The President of the United States has officially proclaimed October 24, 1961 as United Nations Day. He has urged local officials to work with citizen groups in arranging for community programs that will demonstrate faith in the United Nations and contribute to a better understanding of its aims, problems, and accomplishments.

Our Committee is ready to assist you in organizing this observance of the Sixteenth Anniversary of the United Nations. If you have not already chosen a leading citizen as United Nations Day Chairman, please do so, and we shall send you an "Award of Merit" certificate for you to sign and present in recognition of his or her public service. Tell us your Chairman's address, so that we can send, directly, our helpful "Chairman's Kit."

The citizens of your community need to know more about what the United Nations is doing. You can help. Last year over 2,100 Mayors and City Managers officially cooperated in observing United Nations Day. The participation of your municipality is vitally important in 1961!

United States Committee for the United Nations
Robert S. Benjamin, National Chairman
375 Park Avenue Plaza 5-1500
New York 22, N. Y.

Now you can "QUICK-WASH" with LO-BLO, the AIR BROOM . . .

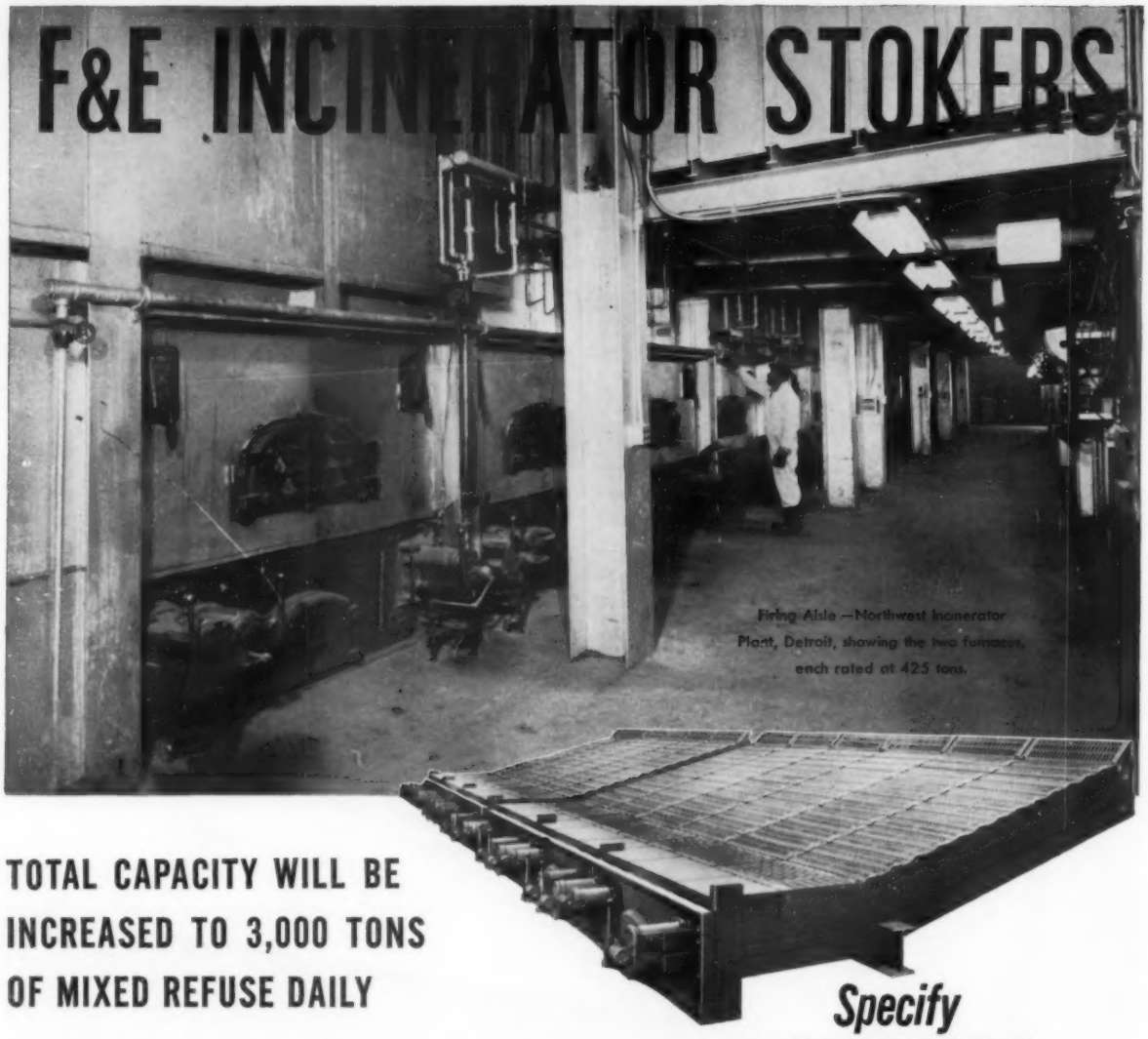
• By introducing standard water hose into the air-blast (simple attachment), the LO-BLO washes and dries an area in a jiffy. Ideal for sidewalks, parking areas, streets & highways AFTER an auto accident. And the Lo-Blo is a year 'round machine:

FOR YOUR LEAF PROBLEM—you walk this terrific blast of air (no water) in windrow fashion, blowing litter to a central point for gathering. In parking lots it blows right under cars.

FOR BLACKTOP PATCHING, clean the hole with a Lo-Blo and you get a solid bond. Other attachments include: a SNOW THROWING BLADE ahead of blast (this really works) . . for flex house to get adequate air down into MANHOLES. If you haven't seen this versatile idea of putting AIR TO WORK, write or call for a demonstration.

ATWATER-STRONG CO.
ATWATER, OHIO Tel. WHitehall 7-2344

DETROIT to install TWO MORE F&E INCINERATOR STOKERS



Firing Aisle—Northwest Incinerator Plant, Detroit, showing the two furnaces, each rated at 425 tons.

TOTAL CAPACITY WILL BE INCREASED TO 3,000 TONS OF MIXED REFUSE DAILY

Seven F&E Multi-Cell Incinerator Stokers, with a total rated capacity of 2,325 tons of mixed refuse daily, are already in use in the various plants in the City of Detroit. Operating experience shows that all units easily exceed their nominal rating in normal operation, resulting in substantial savings to that city.

When additional incinerator capacity was required, F&E Multi-Cell Incinerator Stokers were again selected.

According to Mr. Theodore E. Winkler, Engineer of Waste Disposal, the City of Detroit will have a total rated capacity of 3,000 tons when the two F&E Incinerator Stokers now on order are installed.

Specify F&E Multi-Cell Incinerator Stokers

Complete Flexibility of Operation
Utmost in Economy—Reduced Labor
Rugged Construction—Lifetime Dependability
Progressive Burning for Maximum Results

CONTACT F&E TODAY
for engineering details and data.

FLYNN & EMRICH

BALTIMORE 2, MARYLAND

Land-Use Planning Can Attract Industry

By Dr. J. M. HEIKOFF
Bureau of Community Planning
University of Illinois
Urbana, Ill.

Industrial sites in a community simply cannot be second-rate. Today's industry is as particular as a careful homeowner when it decides where to settle. The automobile and the truck freed industrial plants from dependence on the railroad and local labor supplies. Mechanization and automation of manufacturing processes and materials handling needed horizontal plants on large areas with enough land to provide for open storage, employee parking, or just room for expansion in the future.

Intelligent, realistic land-use planning provides a vital argument in convincing industry that your municipality has worthwhile industrial sites. Even if you have convinced an industry that your city is advantageous, your arguments fail if you cannot find a *good* site.

At an industrial development workshop,* Mr. G. E. Garnhart, vice-president of the Westinghouse Electric Corporation, said:

"In one community which we liked, they had shown us several sites which they considered the most suitable for our purpose, and in each case there were one or more serious objections. One site was exposed to flash flood, another had two high-priced homes on it (which would have made acquisition too costly), and another was across the road from a junk yard. Still another was too remote to make water and gas service available at a reasonable cost. . . ."

We should take note of two points made by Mr. Garnhart. One is that industrial plants have special site requirements; they cannot be located just anywhere. The other is that industrial firms today are concerned about their surroundings and the kind of neighbors they have. What difference did it make to Westinghouse if there was a junk yard across the road from one of the sites? Obviously, a great deal.

What are the characteristics of a good industrial site? They are fairly obvious; the following list does not need detailed explanation:

1. Access to transportation facilities —highway, rail, water, or air depending upon the nature of the materials received and the products shipped.

2. Topography that is level enough to permit economical building construction and site development, but has enough elevation to permit good drainage of storm water.

3. Subsoil of sufficient strength to support heavy structures, machinery, and storage loads.

4. Availability of water, fuel, and electric power.

5. Facilities for waste disposal, especially for industrial wastes that cause pollution.

Industry needs good land; land that would be in demand for other uses too. Unfortunately, industry cannot compete with residence and commerce for good sites because these other uses can generally derive more income per square foot than industry. This means that a community that wants to attract industry has to identify its good industrial sites and then protect them from encroachment.

Long-term options by the promotion agency are effective. Zoning is another means. However, a good

zoning ordinance must be preceded by realistic land-use studies of the whole community as part of a comprehensive development plan.

All industrial plants, however, do not require sites on virgin land. Industrial promotion should also be concerned with the small firms that in the aggregate can provide significant employment and tax income for the community. Many such firms are just starting out and do not have capital to invest in real

(Continued on page 207)

* Arizona Industrial Development Workshop, March 1957.

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PIPE DETECTOR

Model "808"

In addition to the famous model "505" Detectron now offers its completely new model "808" with the first circuitry developed specifically for use with transistors. It is NOT merely an adaptation of earlier tube circuits.

Efficient under every known operating condition, effective in varying temperatures, thoroughly proven and trustworthy. Superior performance and reliability guaranteed.

EXCLUSIVE FEATURES

- ▲ Detects Deeper by all comparisons
- ▲ Automatic Switching for direct connection
- ▲ High Energy-Transfer-Ratio
- ▲ Printed Circuits, properly shielded
- ▲ Separate Oscillator System
- ▲ Highly Perfected Loop Antennas
- ▲ Economical Standard Long-Life Batteries
- ▲ Built-In Battery Testers
- ▲ Snap-Lok Connecting Handle
- ▲ Aluminum Cases for maximum protection

Written Lifetime Guarantee on CMC parts and workmanship

WRITE FOR SPECIFICATIONS AND PRICES

Manufactured by
Tinker & Rasor
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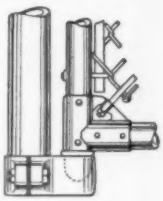
SAN GABRIEL, CALIFORNIA

WHY DOES CYCLONE SET A GATE POST CROOKED?

The strongest fence post will give a little when you hang a heavy gate on it. To compensate for this, expert Cyclone crewmen set the gate post slightly off plumb. When the gate is hung, its weight pulls the post into line.

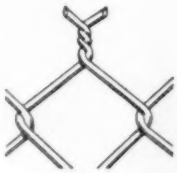


Cyclone gates are made with sleeve construction: remove a few rivets, insert a new part and you have a new gate. Most fence gates are welded; smack one with a car or truck and you have to burn off the damaged section and weld on a new one. It's a major rebuilding job.

Cyclone gates also have adjustable truss rods to true them up. Most welded gates don't. We say Cyclone gates **never** sag, and they don't.

That's not all.

Cyclone uniformly galvanized



Some chain link fence is galvanized before weaving. Twisting, turning and bending by weaving machines may break the seal of zinc; leave uncoated ends to invite corrosion.

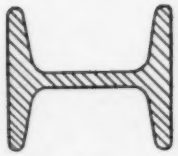
USS Cyclone Fence is galvanized **after** weaving. With the Galv-After process, developed by Cyclone, none of the protective zinc is removed from Cyclone chain link after it leaves our hot-dip tanks. This adds years to fence life.

Every part engineered to job

Take the 4" piece of wire we use to fasten fence fabric to line posts. It's about the smallest thing that goes into a Cyclone fence, yet we've gone to the trouble of pre-shaping it into a clip. The clip makes a neater, tighter job and helps us get your fence up faster. This can save you money.

For safety, dependability, economy

H-Post for strength



The Cyclone H-Post is solid steel covered with a heavy coat of zinc. It's designed like a beam for extra strength. Its flange and web make a better bond with concrete than the round type of line post. There's no inside surface to corrode; all surfaces are exposed and zinc-protected. The H-Post won't crimp if something rams it. You have to twist it first, then bend it to put it down. If it does go down, you can straighten it with heat.

69 Cyclone branches

Cyclone has 69 branch offices around the country. Which means, wherever you are, we're reasonably close by. Our representatives know the fence business, they know the "how" of writing solid fence specifications. They'll be happy to sit down with you anytime to help you develop a set of airtight specifications, which, if followed to the letter, will guarantee a first class fence job.

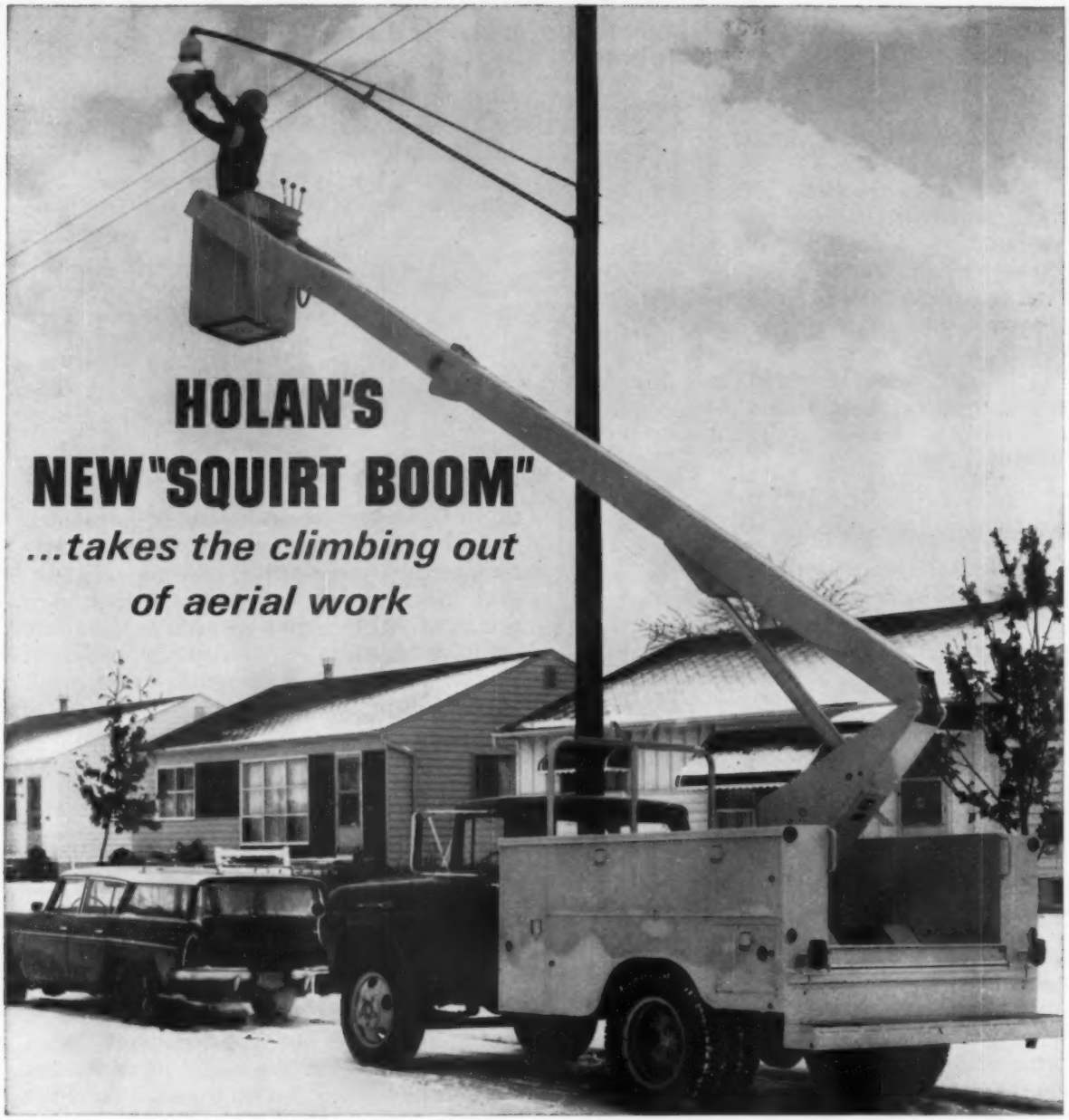
Know the brand

USS Cyclone Fence

Cyclone is the largest manufacturer of chain link fence in the world, and one of the oldest. We've been in business 74 years. Cyclone is *not* a type of fence, it's the name of **one particular brand of fence.** The only company that makes USS Cyclone Fence is the American Steel and Wire Division of United States Steel. And the only people who sell it are the 69 USS Cyclone Branch Offices around the country.

USS and Cyclone are registered trademarks

American Steel and Wire Division of United States Steel



Here it is — Holan's new all-hydraulic Squirt Boom. Ideal for troublemen . . . the fast, safe way to re-fuse transformers. Saves money in group lamp replacement work . . . no climbing up and down a ladder and material and equipment ride in the bucket with the man. Speeds such work as installing electric service, mid-span taps, traffic signal and street light maintenance.

Now one man can do many aerial tasks because he has complete control with levers mounted on the fiberglass bucket (boom and bucket tested at 73,000 volts (A.C.) bucket-to-ground). Telescoping fiberglass boom extends 10′7″. . . raises to a 40-foot working height . . . rotates 360° in either direction. A hydraulic slave cylinder, located in fiberglass bucket yoke, keeps bucket level at all times.

Safe, dependable master-slave type controls are mounted on the bucket and on superstructure. Offset superstructure design and exclusive Holan torsion bars, attached to the body base, provide stability in all positions with a 300-pound payload . . . no outriggers needed.

Let us send you more details on the Holan Squirt Boom . . . designed and built for safe, fast, economical aerial work. Call your Holan Field Representative, or write us.

Holan Corporation, 4100 West 150th St., Cleveland 35, Ohio

Holan

Subsidiary of THE OHIO BRASS COMPANY

HOLAN

(Continued from page 203)

estate. These can be attracted to industrial buildings vacated by the plants that have moved away.

Communities with areas of industrial blight might look into the possibilities of industrial redevelopment. If the best buildings in these areas could be rehabilitated, and the structurally unsound or obselete buildings torn down, space could be provided for parking, off-street loading, and other auxiliary activities. Perhaps some of the streets could be wdened to reduce traffic congestion. These areas have many advantages for the small firm; they are usually close to railroad sidings and have good highway access, they have water, sewer, and all public utilities and services, and they can draw upon a large and varied supply of labor.

We must recognize, however, that while new industry brings benefits to the community it can also bring problems. This does not mean that we should not promote industrial growth; it does mean that we have to be aware of the problems that will inevitably arise and learn how to deal with them intelligently. The kinds of community frictions that can result from uncontrolled industrial location and activity are:

1. Smog and other forms of air pollution.

2. Pollution of streams and other bodies of water and the destruction of attractive waterfront areas.

3. Heavy traffic that causes congestion and disturbance to land uses that formerly fronted on quiet streets.

4. Depreciating effect on land values and assessments of surrounding property.

Proper land usage and land-use controls should therefore be thought of not only from the point of view of how to attract industry to the community but also how to deal

with the problems that arise from industrial growth so that the community will continue to be a pleasant place for industry itself as well as other kinds of land use. ◄◄

Why 1000 Flink ice control spreaders are used in 2 states

Specifying engineers recommend Flink hydraulic tailgate model spreaders

When howling winter blizzards move into Pennsylvania and Illinois, paralyzing communities and turning highways into icy death traps, Highway Department crews move fast with over 1000 Flink ice control rigs to clear roads, keep traffic moving, and save lives.

Why so many Flink spreaders in these two states? Simply because Highway Department officials tried them, and found from their own experience, that Flink spreaders can move out—

Model HDWS4 Single Spinner, Hydraulic Drive

spread anything from salt to cinders —and make quick work of the worst road conditions. What's more, Flink spreaders do the same, efficient job year after year. In the summer, certain models double in seal coating and dust control, and are ideal for these uses as well as for ice control.

Cab Control Saves Time

Take the Flink Model HDWS4 for example. A fleet of these hydraulic tailgate spreaders are on the job right now, keeping traffic rolling on the Illinois Tollway. Everything is handled by one man—right from the cab. The left side spinner permits easy 2 or 3-lane spreads in one pass with no waste on the shoulders. Two-speed auger controls, conserves material and permits instant change from abrasives to straight rock salt. This model, like all Flink Tailgate Spreaders, replaces the tailgate on any standard dump body and permits regular dump use of the box.

Heavy Duty Hopper Spreader

Flink Model LMC Spreader is built to handle salt, cinders and sand for heavy duty ice control and pea gravel and chips for seal coating. Features "Straight-in-line" drive and lets you change both conveyor and spinner speed in minutes. Flink LMC spreaders are available with PTO, hydraulic or gasoline engine drive, cab controlled.

Spreaders For Every Budget And Purpose

The spreaders mentioned above are only two of the complete Flink line. Other Flink models include HDWS5, a hydraulic drive, two spinner spreader; HD42, a self-feeding hydraulic drive model for seal coating and ice control; WD21, a low-cost chain drive spreader; Model SS, a traction drive, pull-type spreader; and Model HV, a seal coating spreader used for fleet use.

Specific information on Flink spreaders and Baker-Flink snow plows, including one-ways, reversibles, power reversibles and V's, can be obtained by mailing the coupon below.

THE Flink co.

FLINK COMPANY
5509 N. Vermillion St. • Streator, Illinois

☐ Please send your ice control and seal coating literature
☐ Please send me latest specifications and catalog on your snow plows

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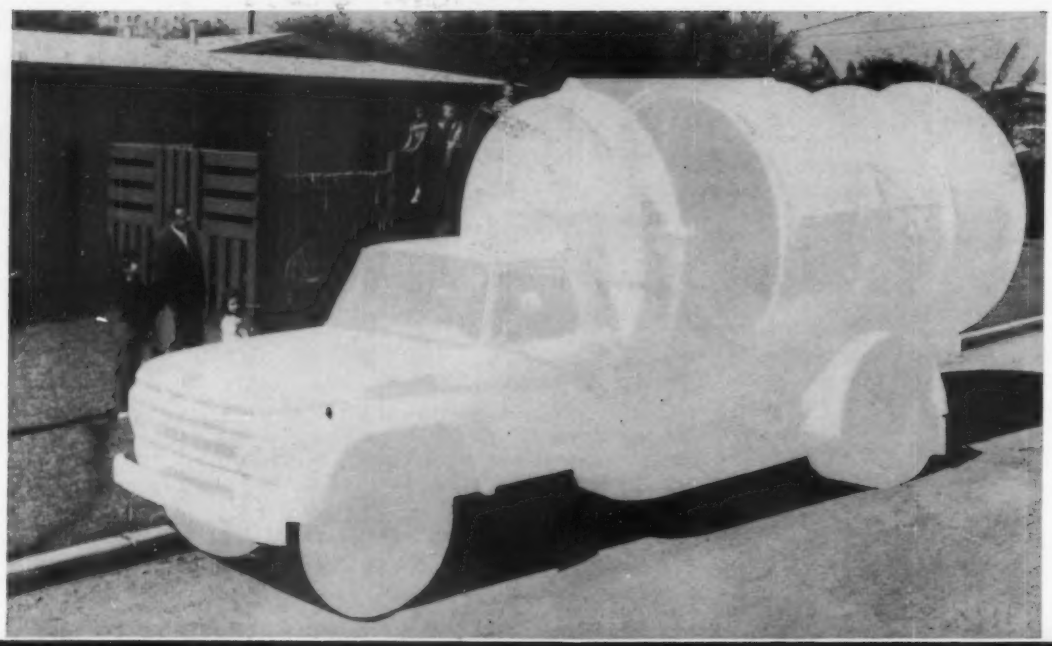
TITLE.....

ADDRESS.....

CITY.....

STATE.....



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You'll Also See These Hydrodynamically Engineered PAK-MOR Features:

- Packer Plate Sweep Action — Clears Loading Area in seconds —and is ready for loading again.
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- Ultimate Cylinder Design and Construction — Telescopic cylinder operates parallel to floor and gives "Packing Pressure That's On The Level."
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- Automatic Engine Control.
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- New Style Back Doors Fully lubricated to withstand the tremendous pressure exerted by this Hydraulic PAK-MOR.
- J.I.C. Hydraulic System with simplified circuit and full air cooled reservoir. Magnetic and strainer type filter system.
- Full 12 Month Warranty on Complete Unit.

Write for folder "Packing Pressure That's on The Level" if you do not plan to attend this Convention. A Local PAK-MOR Distributor will gladly show you how this New PAK-MOR Hydraulic Packer can be a Profit Maker for you. Write today.

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Code Administration—A Third Dimension

The enforcement, or administration, of municipal building, zoning, sanitation and similar codes constitute an important but often overlooked "third dimension" in urban renewal. This opinion was expressed by Barnet Lieberman, commissioner of licenses and inspections, Philadelphia, at the recent meeting of the American Society of Planning Officials in Denver.

The need for public housing and clearance will decrease as time marches on, Commissioner Lieberman feels, but a broadened code-enforcement program will remain as the keystone for decent housing in every city. Failure to establish such a program will mean only more blight followed by more clearance.

For code enforcement to become a *useful* tool in planning and urban renewal, he urges:

- **A definition of "code enforcement" to mean the use of the community's police power, expressed in the various codes and in other incidental activity under the police power, to preserve existing sound structures and to cause the rehabilitation of dilapidated structures.**
- **Changing world "enforcement" to "administration" or "compliance" so that an entirely different connotation will result.**

Code administration, he feels, must not be considered as a *police* operation seeking to apprehend law breakers. The code-administration official must consider his operation as rendering a *service* to property owners and occupants. Regular inspection and notifying the owner of what is necessary to preserve the structure is a service which in effect provides safety for the owner and his family as well as protection to his investment in the property.

Effective code administration, he believes, will require the broadening of the common-law definition of "public nuisance." In an urban society in the last half of the 20th century, many situations can be considered as offending health, safety and general welfare which were not so considered in a rural society. An owner of a non-conforming structure in a residentially zoned district should be required, *under the police power,* to maintain his building in accordance with similar standards set up for the residential structures.

Code administration, he believes, will require a vigorous program by which the code agency with *city funds* will do the work necessary to make the structure comply with the minimum code requirements where an owner "drags" his feet or refuses to comply at all. The city will then recoup the expenditures by collecting the rents or filing a lien. He believes that if such a program is carried on sincerely for one year, "voluntary" compliance will become more "voluntary" with greater speed.

Commissioner Lieberman urged a program for demolition, *under the police power,* of properties which are in such bad condition that it would cost more to make them habitable than they would ever be worth. Buildings gutted out and boarded up but which are still structurally safe, he finds are frequently held by the owners for the high dollar from the clearance agency. ◄◄

Panels Cover City-Hall Steeple

The wooden steeple on the City Hall at Mount Vernon, N. Y., has been covered with over 2,400 square feet of colorful grey, white and black architectural porcelain panels produced by Seaporcel Metals, Inc., 28-20 Borden Ave., Long Island City, New York.

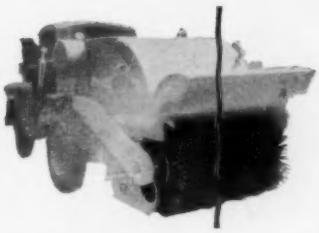
City Engineer Paul Brienza said: "This steeple is a typical wooden steeple and the maintenance costs have been so excessive from steady deterioration that the city turned to this porcelain veneer because it has long life and because it involves virtually no maintenance costs." ◄◄

THROWAWAY YOUR GUTTER BROOMS!

THROWAWAY BROOM OUTDATES GUTTER BROOM REFILLING

Cuts hours labor cost—in minutes worn broom is easily replaced with a new factory made UNILOY THROWAWAY BROOM. Fabricated of premium domestic wire, THROWAWAY broom is perfectly balanced to reduce machine wear and increase mileage. Made for all municipal power sweepers.

SAVE WITH UNILOY CRIMPED ROUND MAIN BROOM WIRE



Exclusive process gives extra hardness and wearing qualities. Round instead of flat—of a special alloy—crimped and heat treated it is intermixed with Palmyra or synthetic fiber for better sweeping and extended main broom mileage.

UNILOY FLAT STEEL GUTTER BRUSH WIRE

- **Top premium domestic grade steel**
- **Soft core and hard shell for superior serviceability**
- **All UNILOY wire offers you real savings**

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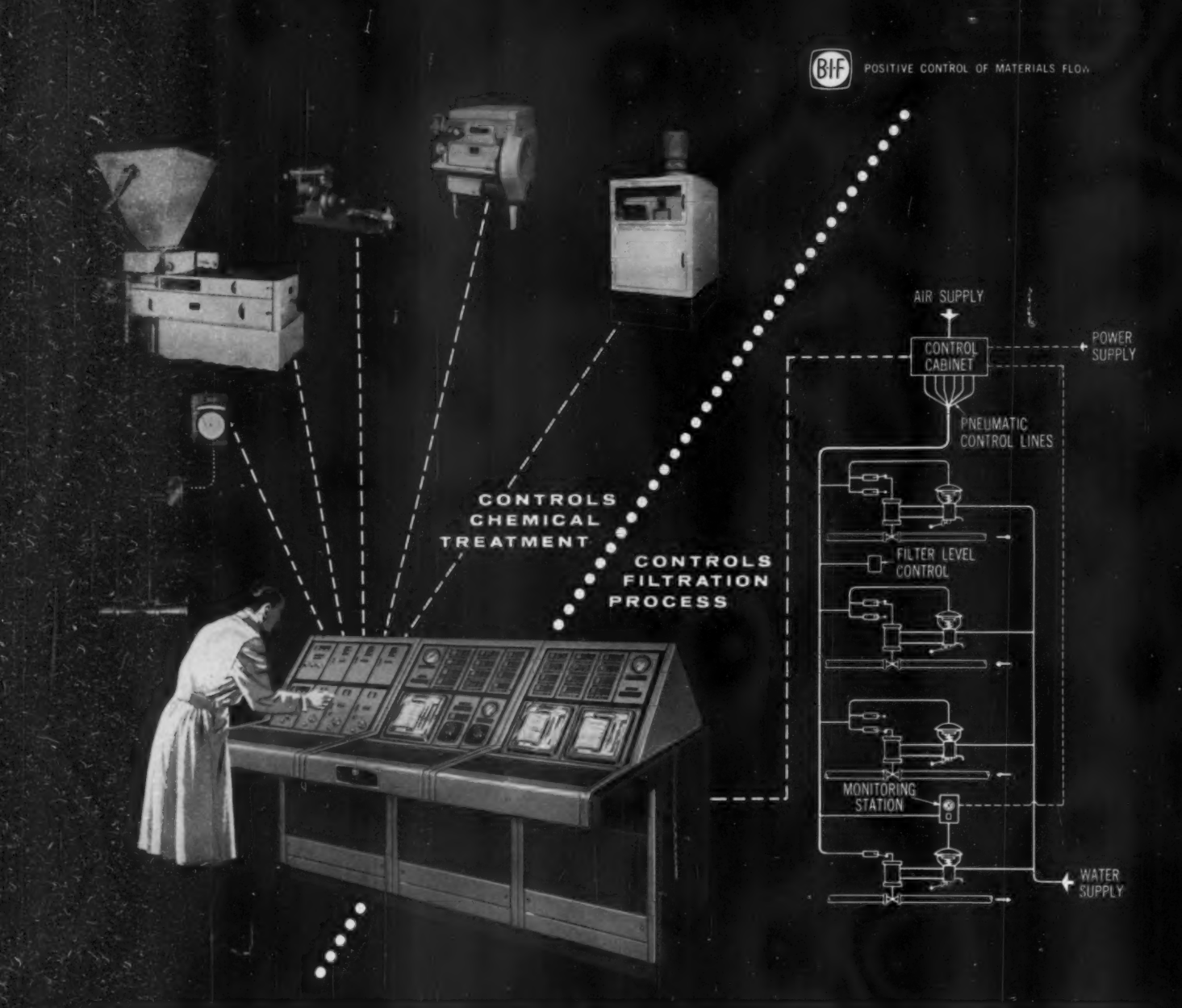

New advanced concept! **B-I-F** *laboratory control... more efficient water treatment for less money!*

ONE MAN CONTROL — From a single console in laboratory, the best qualified man (the plant chemist or chief operator) now has instant fingertip control over plant throughput, chemical additions, and filter backwash. This simplifies and improves process supervision . . . releases other manpower for more productive assignments.

MORE EFFICIENT FILTRATION — Centralized backwash control automatically initiates washing cycle . . . eliminates over or under washing and upset filter beds . . . allows key-man to make immediate, corrective adjustments over entire filtration and treatment process.

REDUCED COSTS—Overall plant construction costs reduced 15% to 20% by eliminating structures over filters. Chemical feeders located remotely for straight-line process flow . . . protects floc, improves settling, provides longer filter runs.

Remote location of feeders also reduces maintenance cost by removing chemical dust problem from office and laboratory.

ANOTHER B-I-F 1st ! — Since the introduction of its Venturi Tube, 74 years ago, B-I-F has continuously developed new products and concepts in the municipal water treatment field. Today Laboratory Control makes your municipal bond dollar go farther by increasing filtration efficiency at lower cost.

REQUEST new Bulletin 2-1.20-1. Write **B-I-F Industries**
463 Harris Avenue, Providence 1, Rhode Island.

B-I-F Industries
A DIVISION OF THE NEW YORK AIR BRAKE COMPANY

METERS • FEEDERS • CONTROLS / CONTINUOUS PROCESS ENGINEERING

Water-Works Authority Retires

Edward E. Alt, one of the nation's leading authorities on elevated storage tanks, retired last month after 43 years of service with the Chicago Bridge & Iron Company.

During his active CB&I career, Mr. Alt's name became synonymous with elevated structures for the storage of water and led to his sobriquet of "Mr. Water Tower" throughout the industry. In 1956,

Edward E. Alt

he was presented the coveted George Warren Fuller Award by the American Water Works Association for " . . . outstanding service to the Illinois section . . . and his exemplary conduct as a manufacturer's representative."

Mr. Alt is a national director of AWWA and past chairman of the Illinois section. He is a past president of the Water & Sewage Works Manufacturers Association, past chairman of the steel-tank affiliate of the Steel Plate Fabricators Association, a member of the water-resources committee of the Illinois State Chamber of Commerce and a member of the Illinois Society of Professional Engineers.

He remains with CB&I as a consultant. ◄◄

$375,000,000 For Airports

The national airport program appears slated for $75,000,000 annually for the next five years, reports Najeeb Halaby, Administrator, Federal Aviation Agency. Identical Senate and House bills provide:

- **$66,500,000 for projects in the 50 states.**
- **$1,500,000 for projects in Puerto Rico and the Virgin Islands.**
- **$7,000,000 specially earmarked for general aviation airports (not involving regular airline operations).**

The legislation plans special emphasis on the "safety features" of airports, as distinguished from the "comfort features" or "convenience features." It provides no money for terminals but concentrates the money on features such as housing for fire and ambulance and rescue equipment.

It grants no money to an airport that does not provide for safety criteria that FAA thinks are essential to a national air-transportation system.

On the other hand, the bill would authorize 75 cents out of every dollar to buy land for approach lights extending beyond the airport runway.

The bill would eliminate the obligation of the sponsor to furnish space in the airport building for government facilities without charge.

It would permit federal aid to purchase land for parking lots, but not to construct the parking area.

Finally, it provides five years of assured fund availability. ◄◄

WHEN YOU NEED A "PRO" FAST LET DAVEY KNOW . . . *FIRST*

At times of sudden emergency, when trees are felled by ice and snow, wind or water, people can get pretty mad—if you don't clean up the damage fast.

That's when you'll be especially glad for a working agreement with Davey, to keep your reputation for good community service. Whether your community is big or small, the resources and flexibility of Davey can save the day for you and may save your trees, too.

The Davey Tree Expert Company is the largest tree saving service in the world. Davey men have that special know-how only old pro's who keep up to date can have. Davey equipment is the most modern, built to do a fast, efficient job. Any kind of tree service you need to help keep your community attractive can be done best by the biggest, most experienced company, geared to serve whole communities—Davey.

Shade tree pruning • Tree trimming for wire clearance • Tree removals • Stump removals • Complete spraying and feeding service • Chemical weed and brush control • Tree planting • All community tree maintenance.

Write direct to F. F. Lofgren, Sales Manager

DAVEY SUPPLIES EVERY KIND OF TREE SAVING SERVICE

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TREE SURGERY

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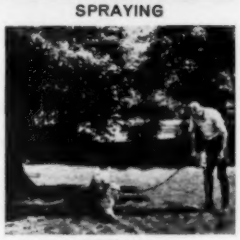

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DAVEY TREE EXPERT CO.

DAVEY TREE EXPERT CO.

Kent 16, Ohio

MARTIN L. DAVEY, JR.
President

THE OLDEST AND LARGEST TREE SAVING SERVICE IN THE WORLD

You **could** VOTE ON ADDING MACHINES! . . . and they **would** add correctly . . . BUT! . . . you would **not** have an accurate election . . . because adding machines are **not** AUTOMATIC VOTING MACHINES . . . which not only add votes immediately, accurately, reliably and safely . . . but which also prevent voter error and spoiled ballots . . . which prevent accidental or intentional ballot marking contray to law . . . and most important, protect election integrity by assurance of ballot secrecy and full protection against fraud.

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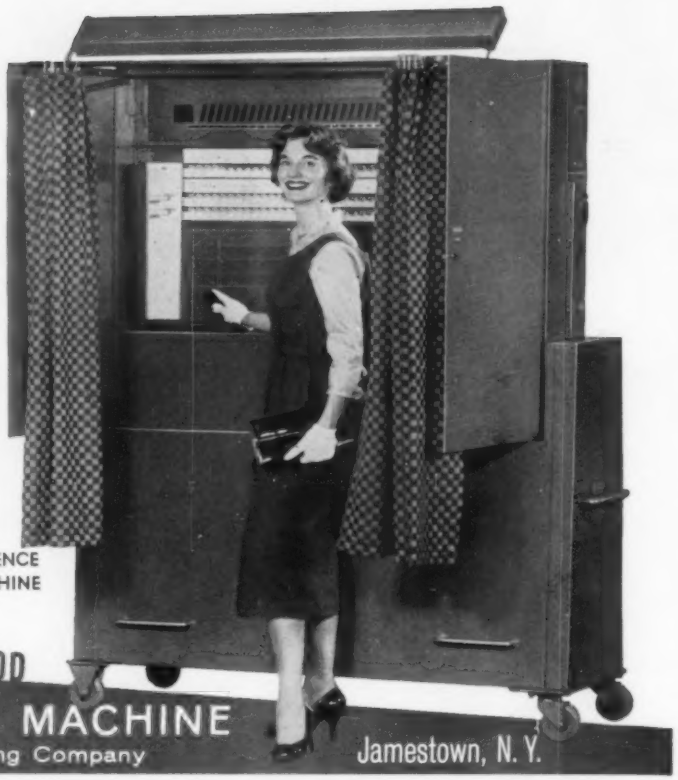
SIXTY-ONE CONTINUOUS YEARS OF ELECTION EXPERIENCE ARE BUILT INTO THIS AUTOMATIC VOTING MACHINE



PRODUCTS FOR THE PUBLIC GOOD

AUTOMATIC VOTING MACHINE

division of Rockwell Manufacturing Company

Jamestown, N. Y.

See at APWA, Minneapolis: A-51, A-52, B-38

TARCO *Dump Body* HOPPERS for Straight De-icing Salts

Gravity feed . . . **no moving parts.**

Tarco "Watchman" Hoppers in two sizes: **Model 3Y—3 cu. yd.; Model 5Y—5 cu. yd.** (Model 1Y—1 cu. yd. for "Jeeps" and pickups). **All welded** steel. **Top screens** and **tie-down clamps.**

Rugged "Watchman" Hoppers used with Type V-3 Electric Cab-Controlled "Scotchman" Spreaders make **ideal one-man operated spreaders.** Spread with body in normal "down" position. Install or remove the Hopper and Spreader trade-in allowances.

See your Tarco "Scotchman" Dealer about liberal in 20 minutes.

TARRANT MFG. CO.

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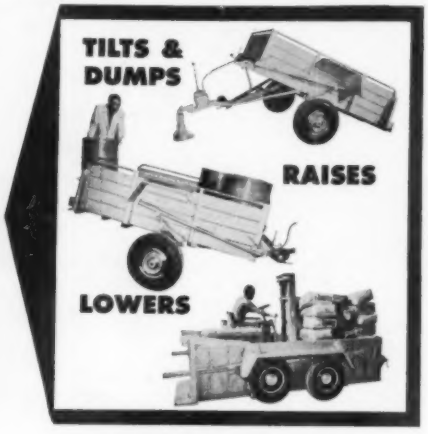

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Capacities range from 1,000 to 10,000 lbs.

Now, large heavy loads easily handled by one man with Wonderlift, the only hydraulically operated all steel trailer that lowers to ground level, raises to dock height and tilts for dumping. Single or tandem wheel models. For full particulars, write:

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ZONING AND PLANNING DECISIONS

Edited by NORMAN WILLIAMS, Jr.

Subdivision Control—Requirements to Dedicate Land Or to Make Payments in Lieu Thereof

NEW YORK. *Gulest Associates* v. *Town of Newburgh*, 209 New York Supplement (2d) 729 (Supreme (lower) Court, December 12, 1960).

NEW YORK. *Reggs Homes* v. *Dickenson*, 179 New York Supplement (2d) 771 (Supreme (lower) Court, September 26, 1958).

It is established American law that a community may require a subdivider to install streets and other public utilities at the time of subdivision, in order to shift the costs of these from the general tax roll to the purchasers of the new lots, and to be sure that these get installed. In addition, a substantial number of communities have required the dedication of land for recreational use, or at least the reservation of open land for this purpose, as a condition of subdivision approval; and, while there has been little case law on the subject, there have been a few cases upholding such requirements.[1]

In the Newburgh case, the town enabling act provided that

> "If the planning board determines that a suitable park or parks of adequate size can not be properly located in any such plat or is otherwise not practical, the board may require as a condition to approval of any such plat a payment to the town of an amount to be determined by the town board which amount shall be available for use by the town for neighborhood park, playground or recreation purposes including the acquisition of property."

In order to implement this provision, the Town Board adopted a series of regulations, providing that the amount to be dedicated should not exceed ten per cent of the total area, and should in no case be less than three acres—and requiring further that, if a requirement for land dedication was found to be unreasonable or undesirable, the subdivider should pay fifty dollars per lot into a special fund for the development "of recreational facilities in the town." On a challenge, the Court held that these requirements were invalid in this instance.

In the opinion, the Court explicitly indicated that the question of the validity of requiring a dedication of land was not involved here.

> "No question is raised in these proceedings as to the right of the Legislature and the Town to authorize the Town Planning Board to require as a condition of its approval of a plat that the plat show in proper cases a park or parks suitably located for playgrounds or other recreational purposes and that the parks shall be of reasonable size for neighborhood playgrounds or other recreational uses (see Lake Secor Development Co., Inc. v. Ruge, 141 Misc. 913, 252 N.Y.S. 809)."

Turning to the question of payments into the fund, the Court held that under the arrangement here involved, the fund could be used to develop recreational facilities anywhere in the town, and had no relationship to the provision of recreational facilities for those living in the new subdivision.

> "This grant of power under S. 277 of the Town Law, as amended, is not necessarily, if at all, for the benefit of the future residents of the area covered by the plat in connection with which the payment is required. By the statute, as amended, the charge is made for the benefit of the town as a whole. Use of the payment is restricted only "for neighborhood park, playground or recreation purposes including the acquisition of property." It can be so used in any section of the town at any time and for any such recreational purpose, including, for example, support of a summer, annual, or general recreation program not directly related to the development of the subdivision. It may be spent before the development of the subdivision is undertaken or completed. In effect, the statute as amended compels a landowner who proposes to subdivide to pay more than his proportionate share of the moneys to be spent on parks, playground and recreational facilities for the Town as a whole."

The Court also held that the requirement of paying money for recreational purposes was too vague to be valid. The Court therefore held that these arrangements were unconstitutional.

In the other case, a similar requirement in the Town of Islip was invalidated several years ago, in a situation where the subdivision plat had been approved several years before. Again, the validity of requiring park land was explicitly assumed.

Requirement of a Comprehensive Plan as the Basis for Zoning

NEW YORK. *Connell* v. *Town of Granby*, 209 New York Supplement (2d) 379 (Appellate Division (intermediate court), January 12, 1961.

MASSACHUSETTS. *Town of Granby* v. *Landry*, 170 North Eastern (2d) 364 (Supreme (highest) Court, November 17, 1960.)

In 1938 the Town of Granby, N. Y., adopted zoning regulations covering less than 10% of its area, and restricting this part of the town to residential and agricultural use; in the succeeding 20 years, it adopted no other zoning provisions.

In recent years, a dry cleaner established his service in the rear of a residence. When the town prosecuted, defendants argued that the zoning ordinance was invalid because it was not in accordance with a comprehensive plan, as required by the enabling legislation. The court upheld the ordinance, on the ground that the comprehensive plan declared in effect that only one part of the town needed zoning.

Fortunately the Appellate Division disagreed. In the opinion, the court emphasized that the intent of the enabling legislation was to prevent "piecemeal, haphazard or partial zoning," and that there was no evidence in the record indicating any reason why part of the town should be zoned and part not. The court recognized that the geographic scope of the zoning ordinance was not necessarily a test of comprehensiveness; but the court indicated that a zoning ordinance less than comprehensive must be affirmatively supported with an explicit indication of why such an arrangement was made.

The courts have not been at their best in interpreting what is meant by the "comprehensive plan" required as the basis for zoning—primarily because filling in so large a gap is really more of a legislative than a judicial function. However, the lower court opinion here represented an all-time "low" in U. S. judicial interpretation on the requirement of a comprehensive plan—a considerable superlative.

In the second case, the Town of Granby, Mass., passed a local ordinance requiring most house trailers to be located in trailer camps. While the ordinance was under the zoning enabling act, the town had no other zoning regulations, nor had it established zoning districts. However, the court upheld the ordinance as a valid use of the zoning power, on the ground that the Massachusetts zoning enabling law did not require "a division of the town into zones or the adoption of a comprehensive plan as a condition of any exercise of the power." The court also indicated several reasons why it would be appropriate to require the concentration of trailers at a single location.

YWCA Club in Residence District

NEW YORK. *Von Kohorn* v. *Morrell*, 9 New York (2d) 27, 172 North Eastern (2d) 287 (Court of Appeals (highest court), January 12, 1961).

In this case, nearby residents challenged the issuance (by the local board of appeals) of a special permit for a Y.W.C.A. building, including recreational facilities and dormitories restricted to members, as a non-profit membership club. The proposed building was in a developed section of White Plains, N. Y., near several new institutional buildings, and on a large site. The highest New York court upheld the special permit, with a most relevant comment on this type of case:

> "As someone remarked at the hearing, everyone wants churches, schools (and clubs) but not in his own neighborhood."

Moreover, the Court upheld a finding that the new building would be located near public transportation and would not cause traffic congestion, with one of the rare discussions in zoning cases as to the relationship between a proposed new building and transportation facilities.

> "Argument is made that there is a lack of transportation facilities. Appellants showed that a bus line passed the property whereupon respondents pointed out that the line ran only one bus an hour. We think the ordinance means that an application may be denied if the proposed use is inappropriately located as to transportation services, but such a finding could not be made by the court as matter of law as to this site. Presumably the bus service will be increased if and when the demand justifies it and, meanwhile, no one knows how many of the young lady occupants of this club will drive their own cars. As to traffic conditions, the board on existing facts and probabilities could properly find that this use would not 'cause undue traffic congestion or create a traffic hazard' beyond those already existing."

The latter language is particularly wel-

(Continued on page 215)

[1] See Lake Secor Development Co. v. Ruge, 141 New York Miscellaneous 913, 252 New York Supplement 809 (1931); Zayas v. Puerto Rico Planning Board, 69 Puerto Rico 27 (1948).

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(Continued from page 213)

come, since the New York courts have recently been indulging in some silly remarks to the effect that zoning is not concerned with traffic considerations.

Exclusion of Trailer Camp From Manufacturing District

MINNESOTA. *State* ex rel. *Berndt* v. *Iten*, 106 North Western (2d) 366 (Supreme (highest) Court, November 4, 1960).

In this case a land owner was planning to develop a trailer camp on his property, then zoned for manufacturing and permitting trailer camps. However, during the negotiations, the village passed a zoning amendment forbidding the use of property in a manufacturing district for any residential purpose, including trailer camps. The property owner argued first that the restriction was unconstitutional, and second that his plans had progressed far enough to give him a vested right to proceed in developing the trailer camp. The Court upheld the new zoning regulation on both grounds.

In the opinion, the court leaned heavily on the presumption of constitutionality and noted that safety was a prime consideration in the enactment of zoning ordinances. While the court's discussion was thus pretty bare, the opinion quoted with approval the opinion below, which emphasized the suitability of this land for manufacturing use and the village's power to reserve it for that purpose.

> "If the village is to have further manufacturing development within its boundaries, the council could reasonably determine that it must provide for the reservation of a suitable area for such development. The property in question is also distinctly separate from the balance of the municipality and there are already a number of manufacturing establishments in the vicinity of this property. Further, a mainline railway track runs along the northern boundary of said property."

"Implied Consent" Law Aids Drunk-Driver Test

Proposals to strengthen enforcement of drunk-driving laws by requiring "implied consent" for chemical tests have been introduced in 21 states this year, a survey by the National Highway Users Conference reveals.

These proposals would require a motorist to submit to a chemical test for intoxication should an officer have reasonable ground to believe he is driving while under the influence of alcohol. The driver must take the test or lose his privilege to drive in the state.

Nine states already have "implied-consent" statutes, Kansas, Idaho, Nebraska, New York, North Dakota, Rhode Island, South Dakota, Utah and Vermont.

Minnesota joined these others by recently enacting similar legislation which requires that a driver be lawfully arrested before submitting to the test and stipulates that only a qualified physician, medical technician or registered nurse may administer the test.

Other states with bills pending to create "implied-consent" laws are Hawaii, Illinois, Maine, Missouri, New Hampshire, Ohio, Pennsylvania, Texas and Wisconsin. Similar legislation has passed one house in Iowa and Oregon. Comparable proposals have been defeated or died on adjournment in 11 other states.

New laws in Nebraska, New York and North Dakota strengthen existing statutes by adding provisions which regulate administration of the test or determine its use as evidence.

Two states have enacted new laws to legalize the use of chemical tests in court proceedings when given with the expressed consent of the defendant. A Maryland law requires police officers to advise persons arrested for drunk driving that they may submit to a chemical test for intoxication. The Massachusetts law permits the admission of evidence secured by chemical tests provided the test was made with the defendant's consent. ◄◄

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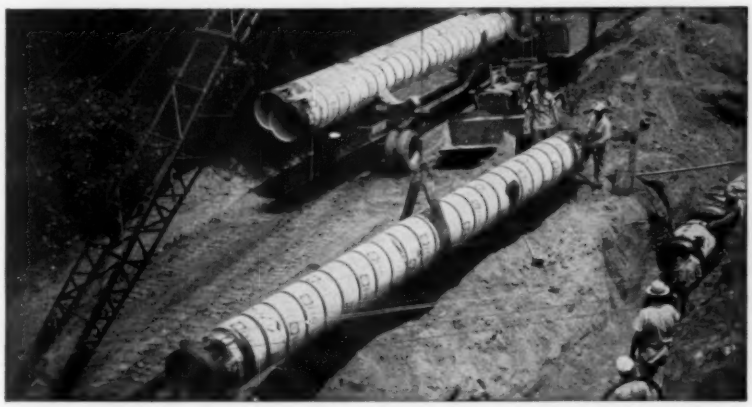

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LEGAL NOTES AND DECISIONS

Prepared by NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICERS, Charles S. Rhyne, General Counsel

Condemnation—Taking of Land For Baseball Parking Facilities Was Public Use

Action by taxpayer against city, held that taking of land by municipality to provide off-street parking places in proximity of major league baseball field in order to allow better flow of traffic congestion generally generated by ball games was for "public use." *Superior Laundry & Towel Sup. Co.* v. *City of Cincinnati*, 168 N.E.2d 445 (Ohio, C.P., Hamilton Cty., Oct. 28, 1959)

Floods—Construction of Retention Basin —Plan Not Abuse of Discretion

Held, legislative conclusion that construction of retention basin to hold back sudden accumulation of surface waters due to heavy rains to permit such accumulation to drain slowly into sewer system of city was necessary in public interest, and that plan adopted would be sufficient to protect people and their property was supported by record, and that adoption of plan by city did not constitute abuse of discretion. *Doering* v. *City of South Euclid*, 168 N.E.2d 16 (Ohio, Ct. App., Cuyahoga Cty., June 18, 1960)

Health—Inspection Without Warrant Upheld

Affirmed judgment adverse to realtor who had been arrested under ordinance authorizing housing inspector to enter upon premises and examine same at any reasonable hour and penalizing refusal to allow such inspection. *Ohio* v. *Price*, 80 S. Ct. 1463 (June 27, 1960)

Sewer Systems—City Action in Leasing Upheld

City Council was authorized to execute lease with charitable public trust for lease of sewer facilities without first having submitted question to vote of people, irrespective of whether council was acting in legislative or administrative capacity. *Meder* v. *City of Oklahoma City*, 350 P.2d 916 (Okla., Mar. 23, 1960)

Taxation—Land Leased From Federal Government Not Taxable

Where federal government as owner of fee leased portions of tract to petitioners at nominal rentals for erection of housing and lease provided that structures were the property of government, held lessees had no interest that could be taxed as real property. *Mitchel Manor No. 1 Corp.* v. *Board of Assessors*, 199 N.Y.S.2d 638 (N.Y., Sup. Ct., App. Div., 2nd Dept., Apr. 4, 1960)

Tort Liability—Fall on Floor of Port Authority Bus Terminal

Action for personal injuries allegedly resulting when plaintiff fell to floor by reason of hole in floor, held plaintiff failed to sustain burden of proving defendant had failed to maintain thoroughfare in reasonably safe condition. *Parker* v. *Port of Authority*, 197 N.Y.S.2d 975 (N.Y., Mun. Ct., Bronx, 2nd Dist., Nov. 17, 1959)

Water Rates—Billing For Excess Water Upheld

Where under city water regulation billing for minimum charge is made on annual basis and that excess water bills may be rendered for periods less than one year, held annual billing requirement applied only to minimum charges and did not prohibit rendering of excess water bill for period of more than one year. *Tax Review Board of Philadelphia* v. *Weiner*, 157 A.2d 879 (Pa., Jan. 18, 1960)

Zoning—Beauty Shop Not "Home Occupation"

Proceeding relating to application for use permit to operate beauty shop in basement of home, held operation of beauty shop not "home occupation" within meaning of ordinance permitting home occupation as accessory use in residential districts. *Boreth* v. *Philadelphia Zoning Bd. of Adjustment*, 151 A.2d 474 (Pa., May 28, 1959)

Zoning—Optionee Has Interest in Ordinance

Where option to purchase property would become binding contract in event premises were rezoned for commercial use, held assignee of option contract had direct property interest in zoning ordinance placing property in residence district. *Rosenbloom* v. *Town of Pittsford, Monroe Cty.*, 186 N.Y.S.2d 390 (N.Y. Sup. Ct., Monroe Cty., June 8, 1959)

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RECENT CITY MANAGER APPOINTMENTS

F. E. McGuire
Brookfield, Ill.

Lowell J. Tooley
Scarsdale, N. Y.

William L. Collins
Mt. Pleasant, Mich.

Evan Norton
Thomasville, N. C.

Gerard S. Vergeer
San Bruno, Calif.

Leslie M. McConnell
Vero Beach, Fla.

CHARLES P. BARRIER, manager of LaFayette, Ga., has been appointed manager of East Ridge, Tenn. Mr. Barrier was previously administrative assistant to the manager of Tallahassee, Fla.

KENNETH A. BOLLINGER, a businessman in Allegan, Mich., has been appointed manager of that city, succeeding P. H. Beauvais.

CAREY C. BURNETT, manager of Albany, Ga., has been appointed manager of Columbia, S. C., succeeding Irving G. McNayr, now manager of Metropolitan Dade County, Fla. Mr. Burnett was previously manager of Valdosta, Ga., and city engineer of Thomasville and Newnan, Ga.

WILLIAM T. CAMPBELL, manager of Bronson, Mich., has been appointed manager of Grandville, Mich., succeeding Bernard Passage.

WILLIAM L. COLLINS, manager of Zion, Ill., has been appointed manager of Mt. Pleasant, Mich., succeeding Allan J. Kronbach.

F. R. COOP, former city manager of Inglewood and Fremont, Calif., was recently appointed city manager of Newport Beach, Calif., succeeding Robert Shelton. Mr. Coop was previously assistant to the manager of Pasadena, Calif., and a public administration advisor with the International Cooperation Administration in Belgrade, Yugoslavia.

LOUIS S. COOPER, deputy chief administrative officer of Fresno, Calif., has been appointed manager of Tempe, Ariz., succeeding Art Bunger. Mr. Cooper was formerly administrative assistant in San Diego County.

E. C. DRUMB, manager of Alice, Texas, has been appointed manager of Plano, Texas, succeeding Joe Marchman. Mr. Drumb was formerly city engineer of Denison, Texas.

DON R. EDMONDS, manager of Donna, Texas, has been appointed manager of Monahans, Texas, succeeding William F. Fuller. Mr. Edmonds was previously manager of Rosebud, Texas.

CARL J. ELLIS, director of finance of Madera, Calif., has been appointed administrator of that city, succeeding Victor E. Barton. Mr. Ellis was previously director of finance and city administrator of Lakewood, Calif.

CARL B. FAIRBANKS, administrative assistant of Newington, Conn., has been appointed manager of Avon, Conn., succeeding Murray Fay.

WILLIAM F. FULLER, manager of Monahans, Texas, has been appointed manager of Sweetwater, Texas, succeeding Garland P. Franks.

COLE HENDRIX, manager of Marceline, Mo., has been appointed first manager of Gladstone, Mo. Mr. Hendrix was formerly administrative assistant to the manager of San Angelo, Tex.

DALE F. HELSEL, manager of Bellefonte, Pa., has been appointed manager of Painesville, Ohio, succeeding Robert H. McGregor.

HUGH B. HINES, JR., manager of Rocky Mount, N. C., has been appointed manager of Greensboro, N. C., succeeding James R. Townsend, who is retiring. Mr. Hines was previously manager of Sanford and Jacksonville, N. C.

FRANCIS M. HOAG, a businessman in Crystal Lake, Ill., has been appointed manager of Yankton, S. D., succeeding James L. Jensen. Mr. Hoag was previously manager of Manchester, Iowa, and Crystal Lake, Ill.

ROBERT E. HOLLANDER, acting manager of Palatine, Ill., has been appointed manager of that city, succeeding Robert J. Eppley. Mr. Hollander was previously public works director of Palatine.

WESLEY M. HOWE, assistant manager of Winston-Salem, N. C., has been appointed manager of Montrose, Colo., succeeding Donald R. Wageck.

LEO HUTH has been appointed manager of Donna, Texas, succeeding Don R. Edmonds. Mr. Huth was previously manager of Brownsville, Texas.

CARL FRANKLIN JESTER, JR., has been appointed manager of Norton, Va., succeeding Evan Norton. Mr. Jester was formerly assistant engineer of Fredericksburg, Va., and engineer of Lexington, N. C.

ELLWOOD L. KOCH, manager of Ferguson, Mo., has been appointed manager of Marceline, Mo., succeeding Cole Hendrix, now manager of Gladstone, Mo.

L. M. MCCONNELL, budget director of Metropolitan Dade County, Fla., has been appointed manager of Vero Beach, Fla., succeeding James W. Young. Mr. McConnell was previously manager of South Miami, Fla., Council Bluffs, Iowa, Warren, Pa., and Ketchikan, Alaska.

(Continued on page 221)

F. R. Coop
Newport B'ch, Calif.

O. B. Stokes
Valdese, N. C.

Cole Hendrix
Gladstone, Mo.

John H. Swindall
Big Stone Gap, Va.

Harold E. Williams
Palatka, Fla.

Carl J. Ellis
Madera, Calif.

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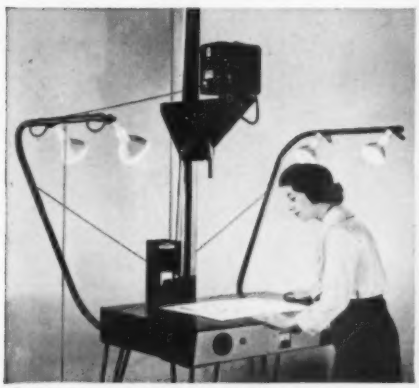

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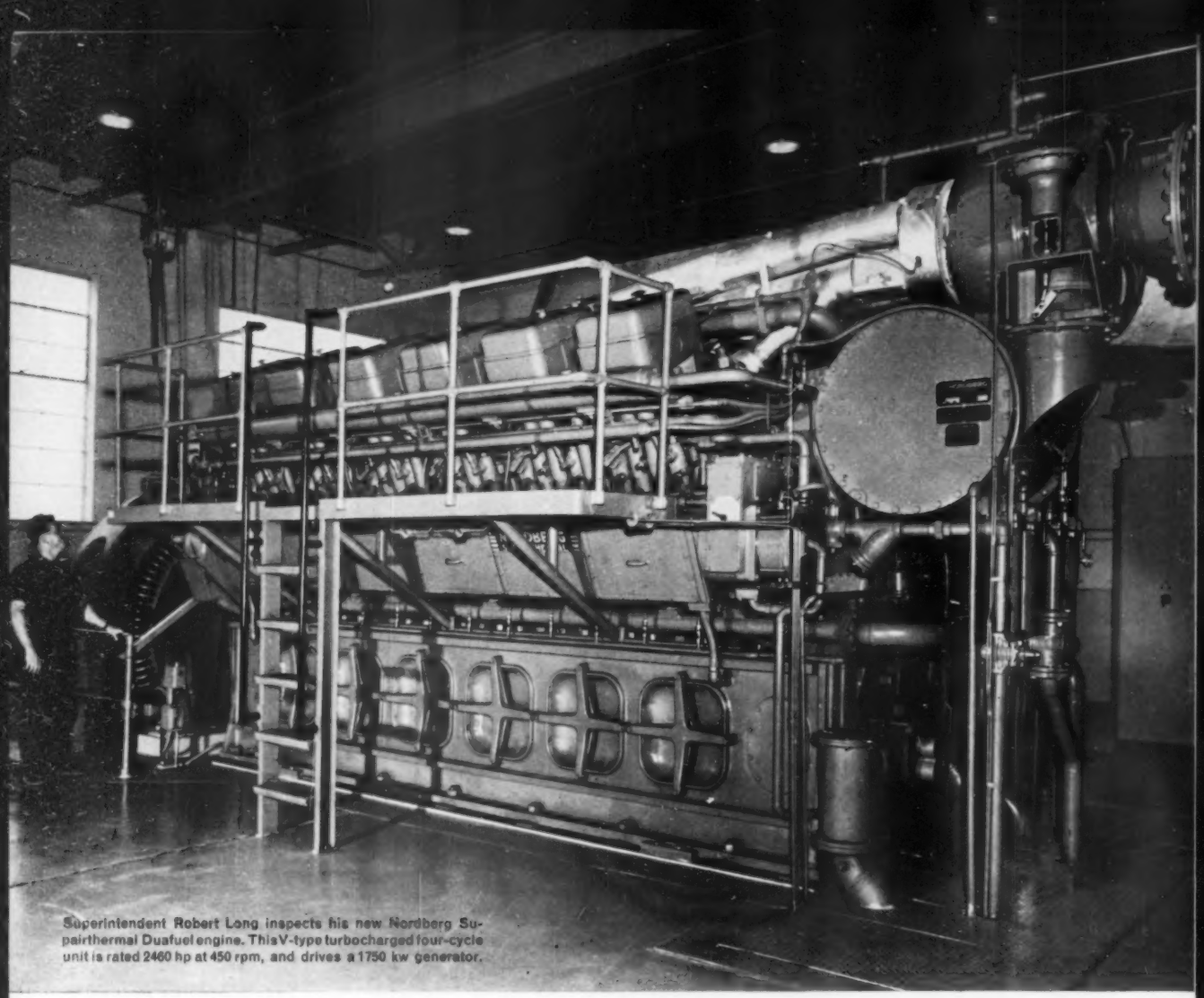

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P980

Recent City Manager Appointments

(Continued from page 218)

FREDERICK E. MCGUIRE, acting manager of Brookfield, Ill., has been appointed manager of that city, succeeding Homer P. Ball, Jr.

OTTO C. NEUMANN has been appointed first manager of Granby, Conn. Mr. Neumann was previously employed by the State of New York.

EVAN NORTON, manager of Norton, Va., for four years, has been appointed manager of Thomasville, N. C., succeeding W. T. Green, Jr.

ROBERT W. PALMER, JR., has been appointed manager of Waldoboro, Maine, succeeding Willard Brown.

WADE E. PEEBLES, director of public works at Torrance, Calif., has been appointed manager of that city, succeeding George W. Stevens.

LEROY PICARD, manager of Warren, Maine, has been appointed manager of Old Town, Maine, succeeding John P. Bibber.

CARROL F. PICKENS, manager of Maysville, Ky., has been appointed first manager of Blue Ash, Ohio. Mr. Pickens was previously director of research and information, University City, Mo.

ERNEST L. QUISENBERRY, manager of Farmville, Va., for the past four years, has been appointed manager of Bristol, Va., succeeding Robert L. Morrison. Mr. Quisenberry was previously manager of Pearisburg, Va., and prior to that, assistant city engineer of Johnson City, Tenn.

LOUIS SCHEIPERS, JR., manager of Southern Pines, N. C., has been appointed manager of Greenville, N. C., succeeding Leonard P. Bloxam.

O. B. STOKES has been appointed manager of Valdese, N. C., succeeding Lee Ribet.

JOHN HENRY SWINDALL, assistant chief administrative officer of Baldwin Park, Calif., has been appointed manager of Big Stone Gap, Va., succeeding Bruce Sloan Gay.

KENNETH L. THARP, administrative assistant of Los Altos, Calif., has been appointed manager of Warrensburg, Mo., succeeding Stanley Dean Fisher.

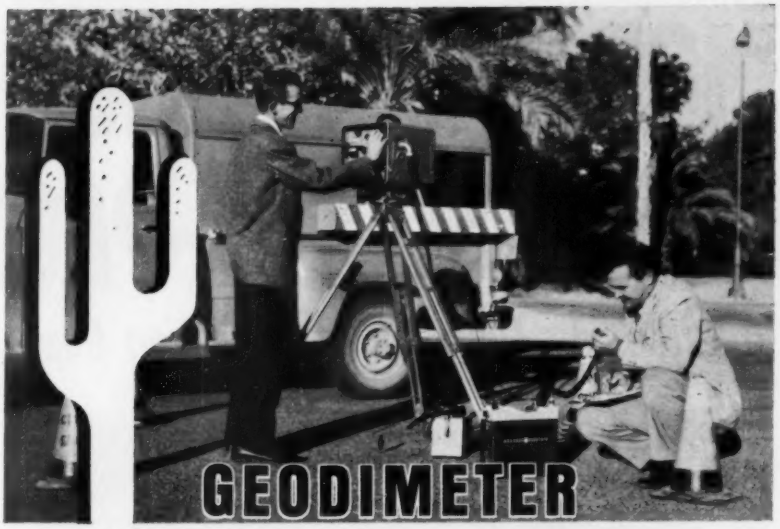
DONALD R. THOMAS, former manager of Bethel, Vt., has been appointed manager of Chester Town and Chester Village, succeeding Aldin M. Rollins.

LOWELL J. TOOLEY, assistant village manager of Scarsdale, N. Y., has been appointed manager of that village succeeding Reeves Newsom who recently retired. Mr. Tooley was previously manager of Shorewood Hills, Wis.

GERARD S. VERGEER, manager of Klamath Falls, Ore., for three years, has been appointed manager of San Bruno, Calif., succeeding John C. Keefe. Mr. Vergeer was previously manager of Port Angeles, Wash., and Baker and Milton-Freewater, Ore.

HAROLD B. WILLIAMS, acting manager and city clerk of Palatka, Fla., has been appointed manager of that city succeeding J. A. Hartgett.

ORIN F. NOLTING
Executive Director
International City Managers' Association



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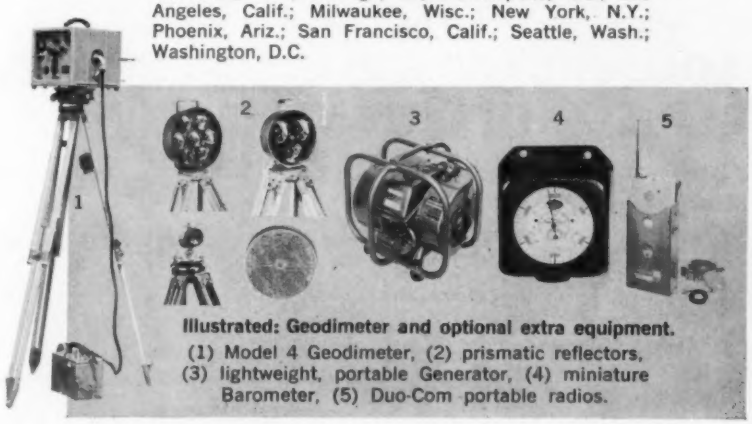

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Sanitary District No. 2 of the town of Hempstead, Long Island, is widely known as a model of refuse collection efficiency. The district services the cities of Baldwin, Roosevelt, and South Hempstead, N. Y. It has used Gar Wood Load-Packers exclusively since 1947—a fleet of 19 units.

Superintendent Sal Sorrentino is a man who knows his business, and he has this to say about the Gar Wood Load-Packer: "It's unquestionably the best unit made. Our Load-Packers give us full-capacity loads with excellent fuel economy, and we have had practically no maintenance problems whatever."

By starting with these outstanding packers, then giving them excellent care, Sorrentino has built his operation into one of the best in the country. It's a formula that can cut costs for any municipality, any private collector. Your Gar Wood-St. Paul distributor will be happy to prove it to you.

LOAD-PACKER 600 IS SUPERIOR FOR SIX IMPORTANT REASONS

There are six big reasons why the Load-Packer 600 carries larger loads at less cost per load:

1. **FASTEST OPERATION**—Crew starts reloading in just 4 seconds... full cycle takes only 10 seconds.
2. **GREATEST COMPACTION**—Direct thrust compaction packs more per yard than any competitive unit.
3. **BIGGEST LEGAL PAYLOADS**—Biggest loads on any given chassis for two reasons. First, dead weight is cut to a minimum; second, telescopic hoist eliminates heavy sub-frames and improves weight distribution.
4. **SAFEST, MOST DEPENDABLE**—Controls are simple, foolproof. Operator has positive control. Fewer moving parts, less linkage, few adjustments.
5. **GREATEST ECONOMY**—Biggest hopper and fastest packing cycle cut fuel costs and equipment wear.
6. **LARGEST, LOWEST HOPPER**—Big 1½ yard, 74-inch-wide hopper, plus low loading height speeds collection, makes crew's job easier, means fewer packing cycles.

GAR WOOD INDUSTRIES, INC. Wayne, Michigan Richmond, California

CONVENTIONS — WHEN AND WHERE

Conventions listed this month for the first time are indicated by an asterisk (*)

Sept. 10-13—Louisville, Ky.

KENTUCKY-TENNESSEE WATER POLLUTION CONTROL ASSOC. Annual Meeting (Brown Hotel). Sec.-Treas., S. Leary Jones, 602 Cordell Hull Bldg., Nashville 3, Tenn.

Sept. 11-13—Louisville, Ky.

AMERICAN WATER WORKS ASSOCIATION—Kentucky-Tennessee Section. Annual Meeting (Brown Hotel). Gen. Mgr., Harold F. Mount, Preston Street Rd., Water Dist. No. 1, 5400 Preston Hwy., Louisville, Ky. *Joint Meeting with*—

KENTUCKY-TENNESSEE WATER POLLUTION CONTROL ASSOC.—Sec.-Treas., S. Leary Jones, 602 Cordell Hull Bldg., Nashville 3, Tenn.

Sept. 13-15—Saranac Inn, N. Y.

AMERICAN WATER WORKS ASSOCIATION—New York Section. Semi-Annual Meeting (Saranac Inn). Sec.-Treas., Kimball Blanchard, c/o Neptune Meter Co., 22-22 Jackson Ave., Long Island City 1, N. Y.

Sept. 13-15—Pierre, S. Dak.

SOUTH DAKOTA MUNICIPAL LEAGUE. Annual Meeting (St. Charles Hotel). Exec. Dir., J. G. Barger, P. O. Box 938, Aberdeen, S. Dak.

Sept. 13-15—Minneapolis, Minn.

AMERICAN WATER WORKS ASSOCIATION—North Central Section. Annual Meeting (Pick-Nicollet Hotel). Sec.-Treas., Carl A. Flack, Walter Dept., 216 City Hall, St. Paul, Minn.

Sept. 14-16—Mackinac Island, Mich.

MICHIGAN MUNICIPAL LEAGUE. Annual Meeting (Grand Hotel). Director, John H. Huss, 205 S. State, Ann Arbor, Mich.

Sept. 14-16—Salt Lake City, Utah

UTAH MUNICIPAL LEAGUE. Annual Meeting (Newhouse Hotel). Exec. Dir., Tom McCoy, Newhouse Hotel, Salt Lake City, Utah.

Sept. 14-16—West Harwich, Mass.

NEW ENGLAND STATE AND MUNICIPAL FINANCE OFFICERS' ASSOC. Annual Meeting (Hotel Belmont). Sec., James J. Costello, Town Accountant, Town Hall, Winchester, Mass.

Sept. 17-19—Kansas City, Kans.

LEAGUE OF KANSAS MUNICIPALITIES. Annual Meeting (Town House Hotel). Exec. Dir., E. A. Mosher, 112 West Seventh St., Topeka, Kans.

Sept. 17-20—Tamiment, Pa.

PENNSYLVANIA MUNICIPAL AUTHORITIES ASSOC. Annual Meeting (Tamiment-in-Poconos Hotel). Exec. Sec., J. E. Slupecke, 2415 N. Front St., Harrisburg, Pa.

Sept. 17-21—Poland Spring, Me.

NEW ENGLAND WATER WORKS ASSOCIATION. Annual Meeting (Poland Spring House). Sec., Joseph C. Knox, 73 Tremont St., Boston, Mass.

Sept. 20-22—Atlanta, Ga.

GEORGIA WATER AND SEWAGE ASSOCIATION. Annual Meeting (Georgia Institute of Technology). Sec., Waste Section, R. S. Ingols, Prof. School of Applied Biology, Georgia Tech., Atlanta, Ga.

Sept. 20-22—Rapid City, S. D.

AMERICAN WATER WORKS ASSOC.—South Dakota Section. Annual Meeting (Sheraton-Johnson Hotel). Sec., J. Darrell Bakken, Div. of San. Engr., State Dept. of Health, Pierre, S. D. *Joint Meeting with*—

SOUTH DAKOTA WATER & SEWAGE WORKS CONFERENCE, Sec., Don C. Kalda, S. D. State Dept. of Health, Pierre, S. D.

Sept. 20-22—Cleveland, Ohio

OHIO MUNICIPAL LEAGUE. Annual Meeting (Pick-Carter Hotel). Exec. Sec., W. H. Edwards, 60 E. Broad St., Columbus 15, Ohio.

Sept. 21-22—Scottsbluff, Neb.

LEAGUE OF NEBRASKA MUNICIPALITIES. Annual Meeting (Lincoln Hotel). Exec. Sec.-Treas., A. G. Wurst, 303 Continental Bldg., Lincoln 8, Neb.

Sept. 21-23—Atlanta, Ga.

AMERICAN INSTITUTE OF PLANNERS—Southeastern Chapter. Annual Meeting (Dinkler-Plaza Hotel). Pres., Philip A. Stedfast, City Hall, Columbia, S. Car.

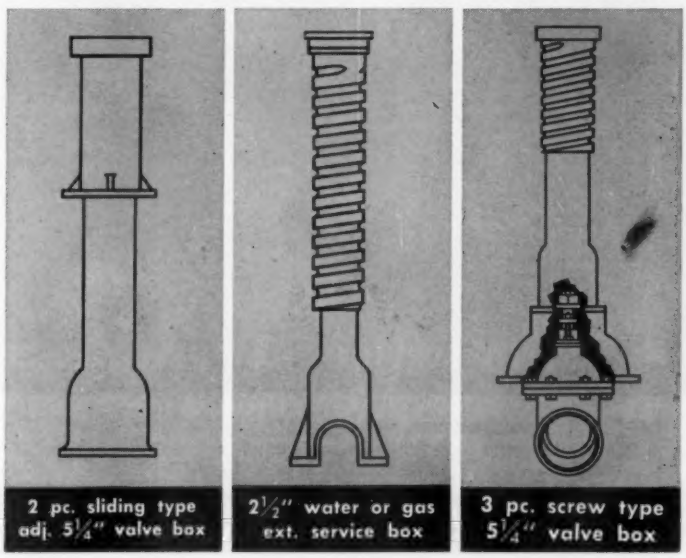
(Continued on page 224)

BUFFALO PIPE & FOUNDRY

BUFFALO MUNICIPAL CASTINGS

are available in every size and style!

No matter what size, shape or style municipal casting you may desire—you're practically sure to find a "Buffalo" casting to serve your needs. Or, where desired, castings may be made to your own specifications. Whether you need valve, service or roadway boxes, meter boxes, manhole rings and covers or other municipal castings, you'll find all "Buffalo" castings designed for service and dependability.



2 pc. sliding type adj. 5¼" valve box

2½" water or gas ext. service box

3 pc. screw type 5¼" valve box

Prompt quotations given on all your standard or special gray iron or non-ferrous castings.

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This unexcelled record for economy, efficiency and safety certainly recommends PERMA-LINE as the ideal pavement marking material.

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PERMA-LINE Mfg. Corp. of America • 750 S. Clinton St., Chicago 7, Ill.

Conventions—When and Where

(Continued from page 223)

Sept. 24-26—Norfolk, Va.

VIRGINIA MUNICIPAL LEAGUE. Annual Meeting (Golden Triangle and Monticello Hotels). Exec. Sec., Harold I. Baumes, 905 Travelers Building, Richmond 19, Virginia.

Sept. 24-27—Minneapolis, Minn.

AMERICAN PUBLIC WORKS ASSOCIATION. Annual Meeting (Municipal Auditorium). Exec. Dir., Robert D. Bugher, 1313 East 60th Street, Chicago 37, Ill.

Sept. 24-28—New York, N. Y.

NATIONAL INSTITUTE OF MUNICIPAL LAW OFFICIALS. Annual Meeting (Waldorf-Astoria Hotel). Gen. Counsel, Charles S. Rhyne, 839 17th St., N. W., Washington 6, D. C.

Sept. 24-28—Rochester, N. Y.

AMERICAN INSTITUTE OF PARK EXECUTIVES. Annual Meeting (Manger Hotel & War Memorial Bldg.). Exec. Sec., Alfred B. La Gasse, Oglebay Park, Wheeling, West Virginia.

Sept. 24-29—St. Louis, Mo.

ILLUMINATING ENGINEERING SOCIETY. Annual Meeting (Chase Park Plaza Hotel). Managing Dir., A. D. Hinckley, 1860 Broadway, New York 23, N. Y.

Sept. 25-28—Las Vegas, Nev.

INTERNATIONAL ASSOC. OF FIRE CHIEFS. Annual Meeting (Hotel Sahara). Exec. Dir., B. Richter Townsend, 232 Madison Ave., New York 16, N. Y.

Sept. 25-29—Seattle, Wash.

INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS. Annual Meeting (Olympic Hotel). Managing Director, Hal Colling, 610 South Broadway, Los Angeles 14, Calif.

Sept. 26-28—Cumb'land Falls Pk., Ky.

KENTUCKY MUNICIPAL LEAGUE. Annual Meeting (Dupont Lodge). Exec. Sec., Carl B. Wachs, Reynolds Bldg., 670 S. Broadway, Univ. of Kentucky, Lexington, Kentucky.

Sept. 27-29—Milwaukee, Wis.

AMERICAN WATER WORKS ASSOC.—Wisconsin Section. Annual Meeting (Schroeder Hotel). Sec.-Treas., Harry Breimeister, Room 607, Municipal Bldg., Milwaukee 2, Wis.

Sept. 30-Oct. 5—Montreal, Que., Can.

INTERNATIONAL ASSOC. OF CHIEFS OF POLICE. Annual Meeting (Hotel Queen Elizabeth). Exec. Dir., Leroy E. Wike, 616 Mills Bldg., 17th & Pennsylvania Ave., N.W., Washington 6, D. C.

Oct. 1-3—Springfield, Mo.

AMERICAN WATER WORKS ASSOCIATION—Missouri Section. Annual Meeting (Kentwood Arms Hotel). Sec., Warren A. Kramer, Chief, Water Supply, Div. of Health, State Office Bldg., Jefferson City, Mo. *Joint Meeting with—*

MISSOURI WATER POLLUTION CONTROL Assoc. Sec.-Treas., Jack K. Smith, P. O. Box 154, Jefferson City, Mo.

Oct. 1-4—Liberty, N. Y.

COUNTY OFFICERS' ASSOC. OF THE STATE OF N. Y. Semi-Annual Meeting (Grossingers Hotel). Exec. Sec., C. L. Chamberlain, 190 State St., Albany, N. Y.

Oct. 1-4—Philadelphia, Pa.

PENNSYLVANIA LEAGUE OF CITIES. Annual Meeting (Bellevue Stratford Hotel). Exec. Dir., John N. O'Neil, 2415 North Front St., Harrisburg, Pa.

Oct. 1-5—Denver, Colo.

PUBLIC PERSONNEL ASSOCIATION. Annual (International) Meeting (Denver Hilton Hotel). Dir., Kenneth O. Warner, 1313 E. 60th St., Chicago 37, Ill.

Oct. 1-6—Detroit, Mich.

NATIONAL RECREATION CONGRESS. Annual Meeting (Cobo Hall). Sec., Charles E. Hartsoe, 8 West 8th St., New York 11, N. Y.

Oct. 2-3—Moncton, N. B., Can.

AMERICAN WATER WORKS ASSOCIATION—Canadian Section. Maritime Branch. Annual Meeting (Brunswick Hotel). Sec., J. D. Kline, Public Service Commission, P. O. Box 608, Halifax, Nova Scotia, Canada.

***Oct. 2-4—Taos, N. M.**

AMERICAN WATER WORKS ASSOCIATION—Rocky Mountain Section. Annual Meeting (Katchina Hotel). Sec.-Treas., Hal Kepner, 550 Alcott, Denver, Colo. *Joint Meeting with—*

ROCKY MOUNTAIN SEWAGE AND INDUSTRIAL WASTES ASSOC. Sec.-Treas., John W. Hernandez, 408 Galesteo St., Santa Fe, N. M.

Oct. 3-5—Norman, Okla.

NATIONAL AIRPORT CONFERENCE. Annual Meeting (University of Oklahoma). Chairman, Austin B. Brough, Div. of Aviation, City Hall, Philadelphia, Pa.

Oct. 4-6—Jamestown, N. D.

NORTH DAKOTA WATER POLLUTION CONTROL ASSOC. Annual Meeting (Gladstone Hotel). Exec. Sec., Norman C. Peterson, State Dept. of Health, Bismarck, N. D. *Joint Meeting with—*

NORTH DAKOTA WATER AND SEWAGE WORKS CONFERENCE. Sec.-Treas., W. Van Heuvelen, Capital Bldg., Bismarck, N. D.

***Oct. 4-6—New York, N. Y.**

AMERICAN SOCIETY OF PHOTOGRAMMETRY. Annual Meeting (Biltmore Hotel). Publ. Dir., Leo Eichen, 331 W. 44th St., New York 36, N. Y.

***Oct. 4-6—Roanoke, Va.**

AMERICAN WATER WORKS ASSOCIATION—Virginia Section. Annual Meeting (Hotel Roanoke). Sec., Edward H. Ruehl, R. Stuart Royer & Assoc., 15 W. Cary St., Richmond 20, Va.

Oct. 5-6—Ithaca, N. Y.

NEW YORK-NEW JERSEY PUBLIC WORKS SCHOOL. Annual Meeting (Hollister Hall, Cornell University). Sec., J. W. Spencer, Highway Research and Extension Engineer, N. Y. State College of Agriculture, Cornell University, Ithaca, N. Y.

Oct. 5-6—Twin Falls, Idaho

AMERICAN WATER WORKS ASSOCIATION—Inter-Mountain Section. Annual Meeting (Rogerson Hotel). Sec., Max Snell, Supt. Power and Water, Soda Springs, Idaho.

Oct. 8-10—Mandan, N. D.

LEAGUE OF NORTH DAKOTA MUNICIPALITIES. Annual Meeting (Lewis and Clark Hotel). Exec. Sec., H. L. Holt, Box 875, Bismarck, N. D.

Oct. 8-11—Biloxi, Miss.

AMERICAN WATER WORKS ASSOCIATION—Alabama-Mississippi Section. Annual Meeting (Buena Vista Hotel). Sec., Ernest Bryan, San. Sales Mgr., McWane Cast Iron Pipe Co., Box 2601, Birmingham, Ala.

(Continued on page 227)

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No wonder! Lockes trim and mow **in one operation,** always cutting ahead of the tractor rolls, leaving no uncut, matted down grass. The entire mower travels on cut grass...a unique feature that never leaves grass permanently stripped or rutted. The ⅓ overhang of the cutting units eliminate half of your secondary trimming operation; saves time, energy and money. Locke Triplexes with their designed-in synchronized roller chain drive, guarantees smooth operation; a safe, sure cut on wet or dry grass, year-in-year-out.

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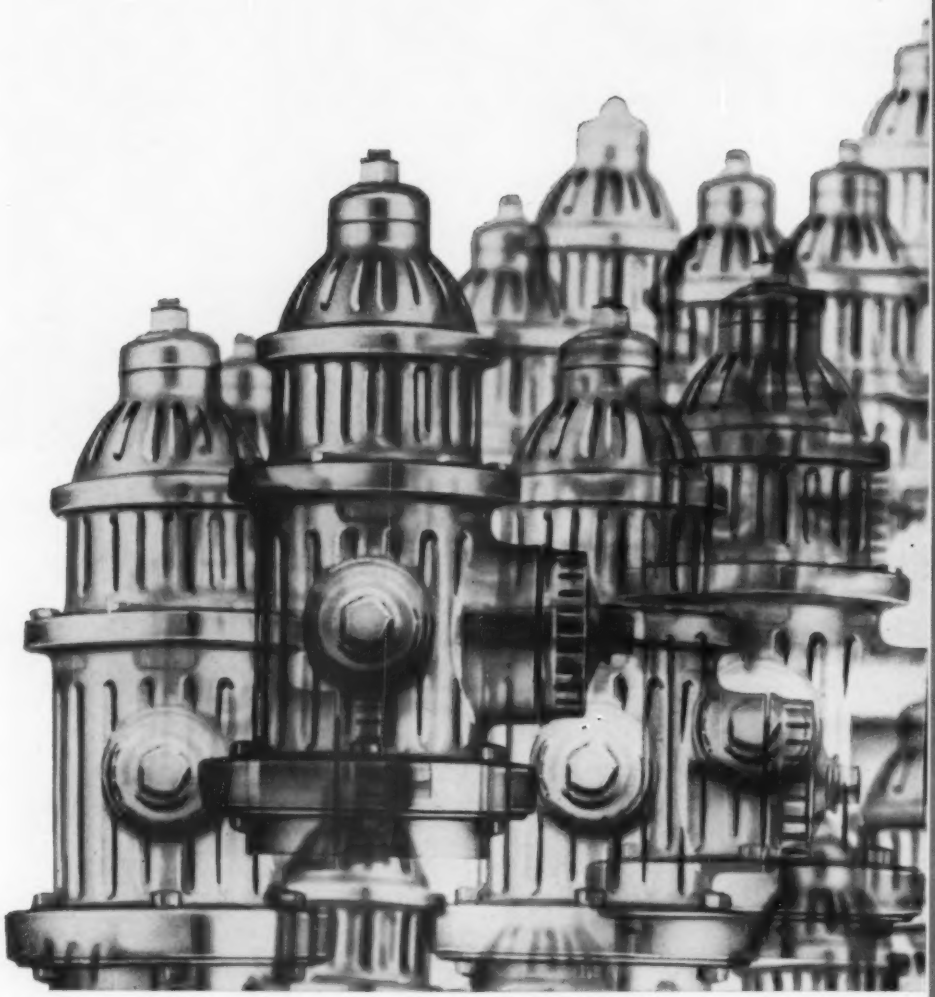

Reasons? Over a million hydrants now in service throughout the world. A number like that speaks for itself, says plenty about the outstanding features of the hydrant and the excellent service and reliability you can expect with R. D. Wood products.

Conform to A.W.W.A. specifications

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Established in 1803

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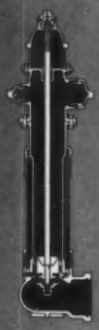
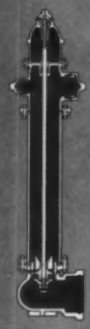
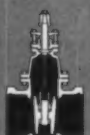


R. D. Wood Mathews Medarnized Hydrant with replaceable barrel.



R. D. Wood Mathews Flange Barrel Hydrant... dry head construction keeps it operating in every kind of weather.

R. D. Wood Swivel Joint Hydrant can be faced in any direction.



R. D. Wood Gate Valve—bury it and forget it.

Conventions—When and Where

(Continued from page 225)

Oct. 8-11—New York, N. Y.

NATIONAL INSTITUTE OF GOVERNMENTAL PURCHASING. Annual Conference (Hotel Commodore). Exec. Vice-Pres., A. A. Hall, 1001 Connecticut Ave., N. W., Washington 6, D. C.

Oct. 8-11—Montreal, Que., Can.

INTERNATIONAL ASSOC. OF ASSESSING OFFICERS. Annual Meeting (Queen Elizabeth Hotel). Exec. Dir., Albert W. Noonan, 1313 E. 60th St., Chicago 37, Ill.

Oct. 9-11—Cincinnati, Ohio

INTERNATIONAL MUNICIPAL SIGNAL ASSOC. Annual Meeting (Hotel Netherland-Hilton). Conference Mgr., Irwin Shulsinger, 130 W. 42nd St., New York 36, N. Y.

Oct. 9-12—Milwaukee, Wisc.

WATER POLLUTION CONTROL FEDERATION. Annual Meeting (Milwaukee Auditorium and Schroeder Hotel). Exec. Sec., Dr. Ralph E. Fuhrman, 4435 Wisconsin Ave., Washington, D. C.

Oct. 9-13—Denver, Colo.

AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS. Annual Meeting (Denver-Hilton Hotel). Exec. Sec., A. E. Johnson, 917 National Press Building, Washington 4, D. C.

Oct. 10-13—Halifax, Nova Scotia, Can.

COMMUNITY PLANNING ASSOC. OF CANADA. Annual Meeting (Nova Scotia Hotel). Nat. Dir., Maj. Gen. M. L. Brennan, 425 Gloucester St., Ottawa, Canada.

Oct. 11-13—Madison, Wis.

LEAGUE OF WISCONSIN MUNICIPALITIES. *Joint Meeting with*—ENGINEERING & PUBLIC WORKS INSTITUTE. Annual Meeting (Hotel Loraine). Exec. Dir., Ed Johnson, 30 E. Johnson St., Madison 3, Wis.

Oct. 15-18—San Antonio, Texas

AMERICAN WATER WORKS ASSOCIATION—Southwest Section. Annual Meeting (Granada Hotel). Sec.-Treas., L. A. Jackson, Robinson Auditorium, Little Rock, Ark.

Oct. 15-18—Portland, Ore.

LEAGUE OF OREGON CITIES. Annual Meeting (Multnomah Hotel). Exec. Sec., Herman Kehrli, P. O. Box 5177, Eugene, Ore.

Oct. 16-19—Dallas, Texas

AMERICAN TRANSIT ASSOCIATION. Annual Meeting (Adolphus and Baker Hotels). Gen. Sec., A. W. Baker, 355 Lexington Avenue, New York 17, N. Y.

Oct. 16-20—New York, N. Y.

AMERICAN SOCIETY OF CIVIL ENGINEERS. Annual Meeting (Statler-Hilton Hotel). Exec. Sec., William H. Wisely, 33 West 39th St., New York 18, N. Y.

Oct. 16-20—Chicago, Ill.

NATIONAL SAFETY CONGRESS. Annual Meeting (Conrad Hilton Hotel.) Sec.-Treas., R. L. Forney, 425 N. Michigan Ave., Chicago 11, Ill.

Oct. 17-20—Los Angeles, Calif.

UNITED STATES CIVIL DEFENSE COUNCIL. Annual Meeting (Ambassador Hotel). Sec., Elliott R. Jackson, Municipal Auditorium, Atlanta 3, Ga.

***Oct. 18-20—Cedar Rapids, Iowa**

AMERICAN WATER WORKS ASSOCIATION—Iowa Section. Annual Meeting (Roosevelt Hotel). Sec., Wilbur E. Bjork, Service Supt., Des Moines Water Works, 1003 Locust St., Des Moines, Iowa.

Oct. 19-20—Des Moines, Iowa

LEAGUE OF IOWA MUNICIPALITIES. Annual Meeting (Hotel Fort Des Moines). Exec. Dir., Max A. Conrad, 308 Insurance Exchange Bldg., Des Moines, Iowa.

Oct. 19-21—Lima, Ohio

STREET MAINTENANCE AND SANITATION OFFICIALS OF OHIO. Annual Meeting (Hotel Argonne). Exec. Sec., Evelyn M. Murgatroyd, 71 N. Union Street, Akron 4, Ohio.

Oct. 22-24—Jacksonville, Fla.

FLORIDA LEAGUE OF MUNICIPALITIES. Annual Meeting (Robert Meyer Hotel). Exec. Sec., Gordon T. Butler, 218 W. Adams St., Room 301, P. O. Box 778, Jacksonville, Fla.

Oct. 22-24—Durham, N. C.

NORTH CAROLINA LEAGUE OF MUNICIPALITIES. Annual Meeting (Jack Tar of Durham Hotel). Dir., Davetta L. Steed, 1009 Raleigh Bldg., Raleigh, N. C.

Oct. 22-25—Montreal, Que., Can.

CANADIAN INSTITUTE OF SEWAGE AND SANITATION. Annual Meeting (Mount Royal Hotel). Sec.-Treas., Dr. A. E. Berry, 72 Grenville St., Toronto, Canada.

(Continued on page 229)

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New Orleans, Louisiana
WELLS PARK
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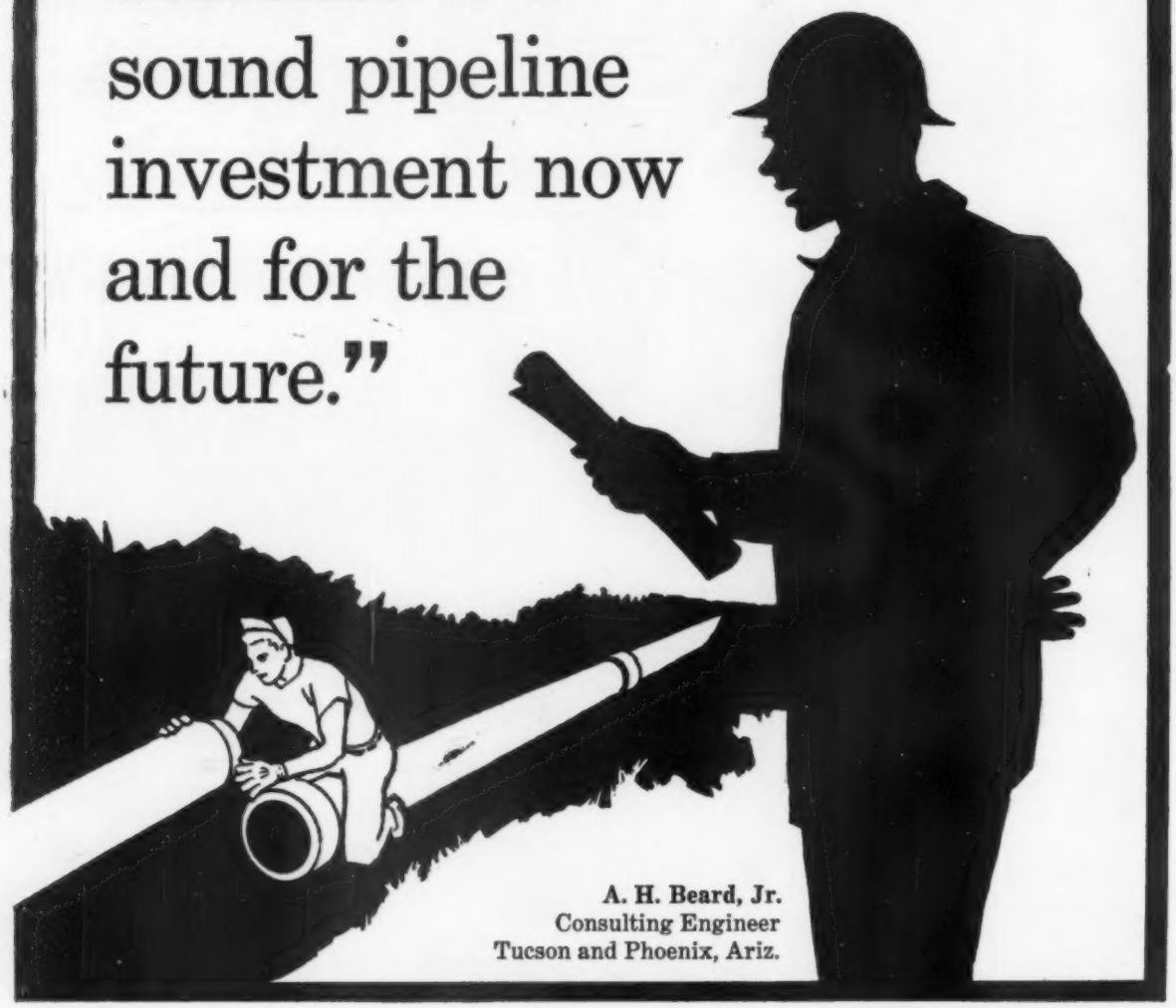

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"When considering a pipe material for water and sewage projects, 'value' analysis plays an important part in our choice. One of the main questions is whether the pipe will perform reliably now *and* in the future with cost advantages to the client.

"Experience has shown that Johns-Manville Transite® Pipe offers the value we seek. It has proved reliable and at very favorable costs. In addition to savings in handling and installing, Transite's unique Ring-Tite® joints assure that leakage tests will not upset job costs. In numerous tests, Transite lines have regularly been under the 'allowable' specification.

"Installations as old as Transite itself show this pipe outstanding under flexure, crush and hydrostatic conditions. Lengths of Transite excavated here in Arizona for tests showed no signs of internal corrosion after 20 years of dependable service."

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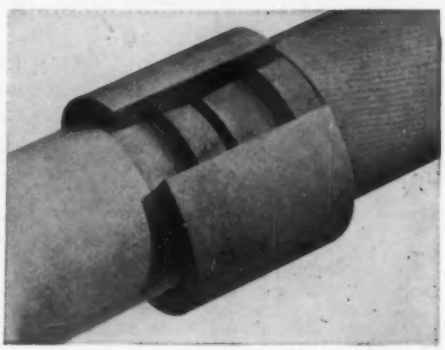

JOHNS-MANVILLE JM

Conventions—When and Where

(Continued from page 227)

Oct. 22-25—San Francisco, Calif.
LEAGUE OF CALIFORNIA CITIES. Annual Meeting (St. Francis Hotel). Exec. Dir. & Gen. Counsel, Richard Carpenter, Hotel Claremont, Berkeley 5, Calif.

Oct. 23-27—Monticello, Ill.
ILLINOIS & INDIANA WATER WORKS MANAGEMENT SHORT COURSE. Annual Meeting (Allerton House). Short Course Supervisor, Hugh Davison, 1166 Illini Hall, Champaign, Ill.

Oct. 25-27—Sacramento, Calif.
AMERICAN WATER WORKS ASSOCIATION—California Section. Annual Meeting (Senator Hotel). Sec.-Treas., Frank F. Watters, California Public Utilities Com., State Bldg., Civic Center, San Francisco 2, Calif.

Oct. 25-27—Toledo, Ohio
AMERICAN WATER WORKS ASSOCIATION—Ohio Section. Annual Meeting (Perry Hotel). Sec., J. H. Bass, Henry P. Thompson Co., 4866 Cooper Rd., Cincinnati, Ohio.

Oct. 25-28—Atlantic City, N. J.
AMERICAN WATER WORKS ASSOCIATION—New Jersey Section. Annual Meeting (Hotel Dennis). Sec.-Treas., A. F. Pleibel, 683 Prospect St., Maplewood, N. J.

Oct. 26-28—Kodiak, Alaska
LEAGUE OF ALASKAN CITIES. Annual Meeting. Sec., Lucy Mick, Box 1764, Palmer, Alaska.

***Oct. 26-28—Cumberland, Md.**
MARYLAND MUNICIPAL LEAGUE. Annual Meeting (Fort Cumberland Hotel). Exec. Sec., Alan Beals, P. O. Box 276, College Park, Md.

Oct. 29-31—Wichita, Kan.
KANSAS ASSOCIATION OF MUNICIPAL UTILITIES. Annual Meeting (Broadview Hotel). Asst. Sec., A. D. McGuire, P. O. Box 99, Overland Park, Kan.

Oct. 29-31—San Antonio, Texas
TEXAS MUNICIPAL LEAGUE. Annual Meeting (Granada Hotel). Exec. Dir., Steve Matthews, 402 Vaughn Building, Austin, Texas.

Oct. 29-31—Wichita, Kan.
NATIONAL ASSOCIATION OF MUNICIPAL UTILITIES. Annual Meeting (Broadview Hotel). Asst. Sec., A. D. McGuire, P. O. Box 99, Overland Park, Kan.

Oct. 29-Nov. 1—Washington, D. C.
NATIONAL ASSOC. OF HOUSING AND REDEVELOPMENT OFFICIALS. Annual Conference (Hotel Sheraton-Park). Exec. Dir., John D. Lange, 1313 E. 60th St., Chicago 37, Ill.

***Oct. 29-Nov. 1—Orlando, Fla.**
AMERICAN WATER WORKS ASSOCIATION—Florida Section. Annual Meeting (Cherry Plaza Hotel). Sec., John B. Miller, Dir., Div. of Water Supply, Bureau of San. Eng., State Board of Health, Box 210, Jacksonville 1, Fla. *Joint Meeting with*—
FLORIDA POLLUTION CONTROL ASSOCIATION. Sec.-Treas., Vincent D. Patton, State Board of Health, Box 210, Jacksonville 1, Fla.

***Nov. 1-2—Northampton, Mass.**
NEW ENGLAND WATER POLLUTION CONTROL ASSOC. Annual Meeting (Northampton Hotel). Sec.-Treas., Richard F. Greeley, 511 State House, Boston 33, Mass.

Nov. 1-3—Baltimore, Md.
AMERICAN WATER WORKS ASSOCIATION—Chesapeake Section. Annual Meeting (Emerson Hotel). Sec., Carl J. Lauter, 6955 33rd St., N.W., Washington 15, D. C.

***Nov. 4—Pittsburgh, Pa.**
PITTSBURGH SANITARY ENGINEERING CONFERENCE. Annual Meeting (Graduate School of Public Health, University of Pittsburgh). Chairman, Dr. Eugene Weisberg, 1626 Forbes Ave., Pittsburgh 29, Pa.

Nov. 4-7—Springfield, Ill.
ILLINOIS MUNICIPAL LEAGUE. Annual Meeting (Hotel Leland). Dir., A. L. Sargent, 537 S. 4th St., Springfield, Ill.

Nov. 26-30—Miami Beach, Fla.
INTERNATIONAL CITY MANAGERS ASSOC. Annual Meeting (Fontainbleau Hotel). Exec. Dir., Orin F. Nolting, 1313 E. 60th Street, Chicago 37, Ill.

Nov. 30-Dec. 2—Miami Beach, Fla.
NATIONAL MUNICIPAL LEAGUE. Annual Meeting (Fontainbleau Hotel). Exec. Dir., Alfred Willoughby, 47 East 68th St., New York 21, N. Y.

Dec. 11-14—St. Louis, Mo.
WEED SOCIETY OF AMERICA. Annual Meeting (Sheraton Jefferson Hotel). Bus. Mgr., Walter C. Jacob, Agronomy Dept., University of Illinois, Urbana, Ill.

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REGARDLESS OF LOAD OR SPEED

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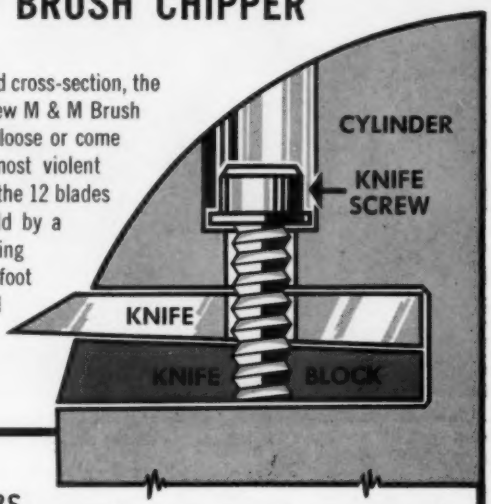
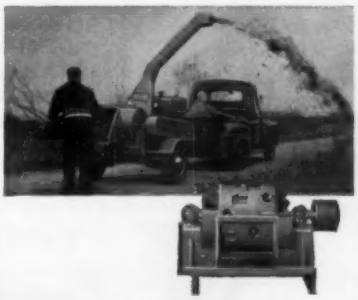
M&M BRUSH CHIPPER

By means of their tapered cross-section, the knives in the amazing new M & M Brush Chipper cannot become loose or come out—even during the most violent chipping action. Each of the 12 blades are wedged and are held by a special heat-treated locking screw tightened to 800 foot lbs. torque. This method gives positive locking action, yet allows rapid adjustment.



M&M BRUSH CHIPPERS GRIND LIMBS UP TO 8" DIAMETER INTO USEFUL, EASILY TRANSPORTABLE CHIPS



M & M Brush Chippers grind branches and logs up to 8" diameter with ease. Dual stationary cutting bar design allows setting for either large or small chips. Built-in blower, coupled to 3-way position discharge chute, regulates direction and distance of chip flow. These items are standard and are incorporated into M & M design on a permanent basis. Write for complete facts, prices and details about these powerful, money-saving, money-making units that meet every brush-disposal requirement.

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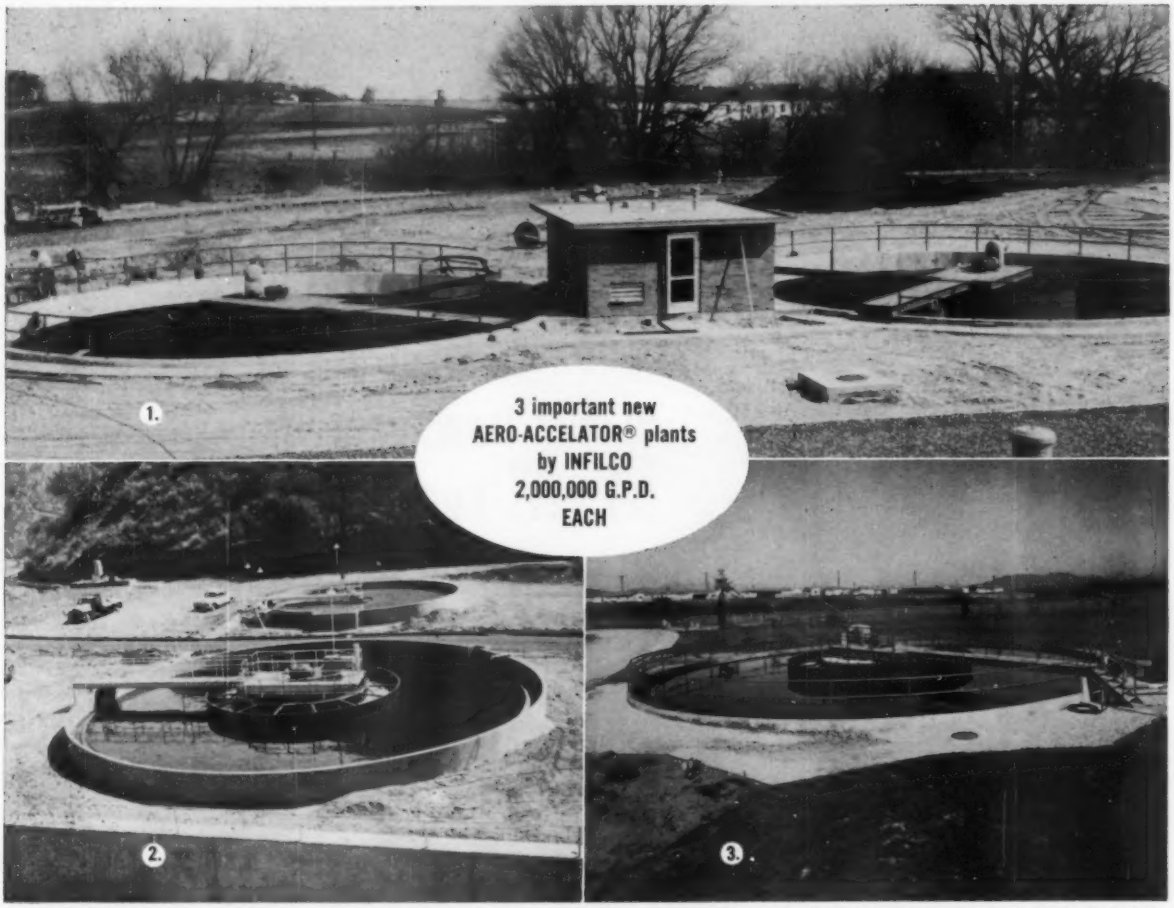

1. Litchfield, Minn. Twin unit plant, each unit 47′ dia. Consulting Engineers—Bonestroo, Rosene & Assoc., St. Paul. 2. Thousand Oaks, Calif. Single unit (in foreground), 67′ dia. Consulting Engineers—Pomeroy and Associates, Pasadena. 3. Santee, Calif. Single unit, 67′ dia. Consulting Engineers—Lawrence, Fogg, Florer & Smith, La Mesa, Calif.

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Handle biological loadings in less basin volume and space than conventional plants.

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MUNICIPAL AND CIVIC PUBLICATIONS

Publications on these pages are available from the addresses indicated and are usually free unless a price is given.

Practical Construction and Design Handbook

SIMPLIFIED ENGINEERING FOR ARCHITECTS AND BUILDERS; THIRD EDITION, *by Harry Parker. John Wiley & Sons, Inc., 440 Park Avenue South, New York 16, N. Y. 1961. 325pp. $7.*

A revised handbook largely rewritten to conform with the current allowable unit stresses and specification requirements in the discussions and solutions of engineering problems. The text is divided into five parts: Principles of Mechanics; Timber Construction; Steel Construction; Reinforced Concrete Construction; and Roof Trusses. A major portion of the book is devoted to the solution of practical problems. A working knowledge of algebra is adequate for the solution of the type of problems discussed. The book enables the reader to determine the proper size of every-day structural members in accordance with the loads to be supported.

Fresh Water from Saline Sources

SALINE WATER CONVERSION—*American Chemical Society, 1155 Sixteenth St., N. W., Washington 6, D. C. 1960. 245pp. $5.85.*

A collection of papers presented at the Symposium on Saline Water Conversion sponsored by the American Chemical Society at the 137th National Meeting of the Society held in Cleveland, Ohio, April 1960. The information presented updates that of the 1957 symposium conducted by the Office of Saline Water. The collection, comprising 22 papers, covers the various methods used for saline-water conversion, new theories, research data, and results obtained from test plants.

Municipal Sourcebook

THE MUNICIPAL YEARBOOK. *Edited by Orin F. Nolting and David S. Arnold. International City Manager's Association, 1313 East 60th St., Chicago 37, Ill. June, 1961. 594 pp. $10 postpaid.*

This year's edition, the 28th, gives practical information on local government, ranging from its municipal organization to the variety of functions performed. The text this year pays special attention to final figures from the 1960 Census of Population showing population and land area for all cities over 5,000.

It also discusses the problems of metropolitan areas with respect to federation, special districts, intergovernmental cooperation, annexations, and area-wide planning. Reports from 50 regional planning agencies provide the basis for a review of trends and future propects.

A new section surveys the financing of sewerage service in 650 cities over 10,000 population: use of sewer rentals, basis of charge, financing sewer trunk line and treatment facilities, and methods of financing sewer laterals in new subdivisions and in older, built-up areas. Another new section provides data for more than 700 cities over 10,000 on the number of city-owned off-street parking lots, the number with a charge for parking, and the number with a that can be accommodated at one time.

Up-to-date information on personnel organization, financial statistics, police and fire data, forms of municipal government, directories of city officials, bibliographies in various fields, and model municipal ordinances are found in the regular sections of the Year Book.

Nineteen major tables contain pertinent information about individual cities.

Metropolitan Transit

METRO: TOWARD A BRIGHTER TRAFFIC FUTURE FOR CITIES AND SUBURBS. *Public Relations Department, American Automobile Association, 1712 G St., N.W., Washington 6, D. C. 1961. 28pp. 15 cents.*

The American Automobile Association makes a noise as though it were about to tell you how to make driving in a metropolitan area as pleasant as riding in a chair car on the boardwalk of an exclusive resort. But if you expect to find anything of practical help here, you will be wasting your time.

AAA stands foursquare boldly opposing any who, by "shrill invective," complains that there are too many private cars downtown. It is indignant with those who propose banning private cars from the downtown areas and equally incensed with those who would use excess turnpike tolls to benefit mass transit facilities. AAA

(Continued on page 233)

VERSATILE LOADER mechanizes removal of windrowed snow, and can be used for year-around handling of bulk materials. Powered by a V-4 Wisconsin power unit, loader is made by Geo. Haiss Mfg. Co., Inc., a Division of Pettibone-Mulliken Corp., Rome, N. Y.

WISCONSIN-powered loader helps you remove snow — improve street safety

Let it snow. The Wisconsin-powered loader enables you to speed snow removal and to expedite handling of anti-skid materials to reduce skid hazards on slippery streets. You save on equipment, and provide cost-cutting mechanization for one of the most vulnerable phases of your budget.

The rugged four-cylinder Wisconsin makes the loader a *buy* for year-around work. Being air-cooled, the engine doesn't need water or anti-freeze. You don't have to worry about dry-ups or freeze ups — nor about winter-summer conditioning. Just change oil, and the Wisconsin is ready to use "as is" in sub-zero cold or in 140° F. heat.

The Wisconsin is precision-built for dependability. Its high torque prevents stalling under shock loads. Tapered roller main bearings last on and on. Stellite-faced exhaust valves and inserts and positive rotators extend valve life up to 500%.

Take the strain off your budget with equipment powered by Wisconsin Engines, *now 3 to 60 hp.* Electric starting available for all models. Get Bulletin S-283. Write Dept. U-11.

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MILWAUKEE 46, WISCONSIN
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U-344

M. C. Petersen (right), Power Plant Superintendent, and Robert Twigg, Operating Engineer, in front of one of the new LSV engines. Estherville's Superintendent of Public Works is Russell Peterson. The installation was engineered by Associated Consultants, Minneapolis.

The decision at Estherville:

two thrifty LSV engines

The Cooper-Bessemer LSV-16 supercharged dual-fuel engine shown here is just half the expansion picture from Estherville, Iowa. This and a duplicate 4210 hp, 3000 kw unit with En-Tronic Control are enabling this thriving town of 8000 to meet its kilowatt demands with a thrift that can't be matched.

To support their decision, Estherville officials saw plenty of power plant performance data on the economy of these Cooper-Bessemer engines. Operating records show that LSV's are delivering 20% to 30% more power per fuel dollar than units of conventional design.

When you start to plan new facilities, be sure to investigate Cooper-Bessemer engines. There's a type and size to match your needs. Call our nearest office.

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ENGINES: GAS · DIESEL · GAS-DIESEL
JET-POWERED GAS TURBINES

(Continued from page 231)

claims that such a ban would strike a blow at the national economy, would regiment Americans and destroy their cherished freedom of choice.

It also says curiously that the growth of suburban living does not damage the core city but actually rejuvenates it. It asserts that rapid transit by rail isn't really rapid, certainly not as fast as freeway transit, and that there should be only a few more such rail services.

It says nothing about the fact that these new freeways wipe out substantial portion's of a city's tax base and, in many smaller municipalities, can wipe out the community itself. Nor does it say anything about the lowered value of property that suddenly finds itself adjacent to one of these noise-and-fume traffic generators.

There are ways to approach and solve the metropolitan transit problems of the more than 200 metropolitan areas in these United States. But AAA's text doesn't present them.

Integrated Housing

THE DEMAND FOR HOUSING IN RACIALLY MIXED NEIGHBORHOODS—*By Chester Rapkin and William G. Grigsby. University of California Press, Berkeley 4, Calif.* 1960. 177*pp.* $6.

City officials now have, in this book, a study which explores what is happening in interracial housing, emphasizing the various supply and demand elements as well as the psychological.

It also explores the nature and implications of the transition process and is based on a study of four areas of Philadelphia where the neighborhoods are changing racially.

Landscaping

LANDSCAPE ARCHITECTURE, THE SHAPE OF MAN'S NATURAL ENVIRONMENT—*By John Ormsbee Simonds. F. W. Dodge Corp., 119 West 40th St., New York 18, N. Y.* 1961. 244*pp.* $12.75.

Here is an analysis of the landscape architecture of the world; an analysis of its effects on the individual and an effort to draw principles and rules for the selection, planning and utilization of space to provide a high degree of fitness, convenience and order for the use for which it was intended. The author, a world traveler, draws especially on the Far East to illustrate his points, providing a textbook of site planning and a selection that will be welcomed by city planners, architects and landscape architects.

Local Government in the United States of America

LOCAL GOVERNMENT IN THE UNITED STATES OF AMERICA. *Martinus Nijhoff, Publisher, 9 Lange Voorhout, P. O. Box 269, The Hague, Netherlands.* 1961. 130*pp.* 6 *guilders (approx.* $2.).

A paperback volume of the prepared papers delivered at the recent World Conference of Local Authorities held in Washington, D. C., June 15th to 20th.

Probably its discussion of the organization and structure of local governments in the United States will attract the most interest. While the analysis is good, we wish the author and her consultants had not ignored village governments that are very much in evidence, or the various forms of boroughs which play an important role in the 49th state; or the absence of any level of government smaller than the county in the 50th state. The author's discussion of the council-manager plan is workmanlike, but her statement that the manager is "not subject to the vicissitudes of political life," and that he "enjoys a permanent status," will bring wry smiles to those in the field. Local governments in Kansas also will protest her ignoring the interesting commission-manager form, which is doing a sturdy job and shows that the administrative form is less important than the unselfish devotion to duty of the men involved.

Flood Control

PAPERS ON FLOOD PROBLEMS. *Department of Geography, University of Chicago. Rosenwald Hall, Chicago 37, Illinois.* 1961. 228*pp.* $4.

This book brings together papers that try to present a new strategy for dealing with flood loss reduction. It draws on the experience of the Tennessee Valley Authority in its local flood studies and the activities of the Corps of Engineers in recommending land-use restrictions. It presents an appraisal of British activities in guiding the use of flood plains and discusses problems encountered in setting up new state regulatory programs experienced by the Iowa Natural Resources Council.

AIR POLLUTION

GENERAL—A Digest of State Air Pollution Laws. U. S. Department of Health, Education and Welfare, Public Health Service, Division of Air Pollution, Washington 25, D. C. 1961. 126pp. 75 cents.

(Continued on page 235)

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INCINERATOR STOKER
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- Alternate lateral rows of reciprocating grates convey the refuse mass through the firing chamber, tumbling and tearing it, to expose its maximum surface to flame, and without manual poking.
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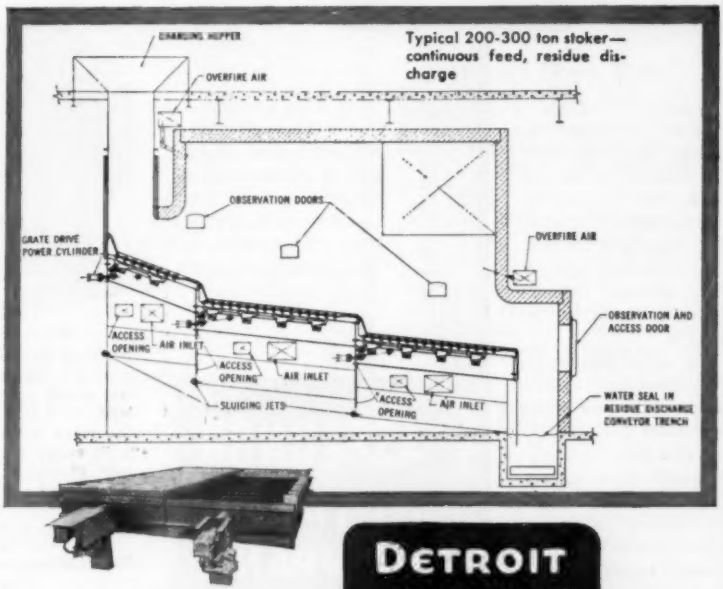

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(Continued from page 233)

ADMINISTRATION & GOVERNMENT

CALIFORNIA—Metropolitan California. The Governor's Commission on Metropolitan Area Problems, Room 5016, State Capitol, Sacramento 14, Calif. 1961. 185pp. $5.

COVINA, CALIF.—We Work for Covina. City Hall, Covina, Calif. 1961. 7pp.

CUYAHOGA CO., OHIO—1961 Local Government Yearbook of the Cities and Villages in Cuyahoga County, Ohio. Cleveland Bureau of Governmental Research, 1307 Ten-Ten Euclid Building, Cleveland 15, Ohio. 1961. 46pp. $2.

NEW YORK—Digest of 1961 Laws Affecting Towns. Association of Towns, State Capitol, Albany, N. Y. 1961. 56pp.

PENNSYLVANIA—Directory of Pennsylvania Council-Manager Municipalities and Municipal Managers. Institute of Local Government, Graduate School of Public and International Affairs, University of Pittsburgh, Pittsburgh 13, Pa. 1961. 136pp.

LIBRARIES

INGLEWOOD, CALIF.—A Program for Improving Library Service in the City of Inglewood. Administrative Officer, City Hall, Inglewood, Calif. 1961. 62pp.

NOTEWORTHY ANNUAL REPORTS

ATLANTA, GA.—Purchasing Department Annual Report. Purchasing Department, City Hall, Atlanta 3, Ga. 1960. 46pp.

CHICAGO, ILL.—1960 Annual Report. Department of Water and Sewers, City Hall, Chicago, Ill. 1960. 17 pp.

FOND DU LAC, WIS.—1958-1961 City of Fond du Lac Progress Report. Newspaper supplement of the *Fond du Lac Commonwealth Reporter*, prepared by the city and inserted as paid advertising. 1961. 16pp.

HONOLULU, HAWAII—Annual Report for 1960. Department of Public Works, Honolulu 13, Hawaii. 1960. 44pp.

KANSAS CITY, KANSAS—Public Utilities Annual Report. Board of Public Utilities, Kansas City, Kansas. 1960. 24pp.

TOLEDO, OHIO—Annual Report 1960. Dept. of Public Service, Division of Water, Toledo, Ohio. 1960. 67pp.

WINNIPEG, MANITOBA, CANADA—The Metropolitan Corporation of Greater Winnipeg Waterworks Branch Annual Report. Waterworks and Waste Disposal Division, 455 Ellice Ave., Winnipeg 2, Monitoba. 1960. 45pp.

PLANNING, ZONING, HOUSING

LOWER GWYNEDD TOWNSHIP, PA.—A Comprehensive Plan for Lower Gwynedd Township, Pa. Montgomery County Planning Commission, Court House, Norristown, Pa. 1961. 164pp. $1.

MILWAUKEE, WIS.—Recommended Six-Year Capital Improvement Program—1961 to 1966, and Progress Report. Capital Improvements Commission, City Hall, Milwaukee, Wis. 1961. 88pp.

NEW JERSEY—Master Plans for Ramsey (Borough), Sandytown (Township), Sparta (Township) Washington (two reports—Borough and Township). Prepared by Robert Catlin, City Planning Consultant, 47 Broadway, Denville, N. J. 1960. $2 each.

PUBLIC SAFETY

GENERAL—Fire Prevention Code—Abbreviated Edition. National Board of Fire Underwriters, 85 John St., New York 38, N. Y. 1960. 53pp.

STREET CONSTRUCTION

GENERAL—Soil Stabilization by Admixing Portland Cement. Highway Research Board, 2101 Constitution Ave., N. W., Washington, D. C. 1960. 50 pp. $1.20.

WATER

GENERAL—Report of the Select Committee on National Water Resources (Pursuant to Senate Res. 48, 86th Congress). U. S. Government Printing Office, Washington, D. C. 1961. 147pp.

REPRESENTATIVE MUNICIPAL BOND ISSUES
From July 11th to August 1st, 1961

Date of Issue	*Locality*	*Amount in $1000*	*Purpose*	*Term Yrs. to Maturity*	*Rate of Int.*	*Yield %*
7/11/61	Chattanooga, Tenn.	3,000	Sewage-Street Impr.	. . .	....	3.60
7/11/61	Detroit, Mich.	2,700	Motor Vehicle Highway Fund	....	....	3.05
7/11/61	Los Angeles, Calif.	15,000	Sewer Election	....	....	3.39
7/12/61	Ketchikan, Alaska	950	City Impr.	....	....	4.01
7/13/61	Milwaukee Co., Wisc.	5,329	Metropolitan Sewerage	8	3.00	2.97
7/17/61	Heath, Ohio	1,000	Sewerage System Impr.	11	4.50	....
7/17/61	Manchester, Conn.	160	Sanitary Sewer Impr.	6⅝	3.13	....
7/19/61	Milwaukee, Wisc.	7,250	Corporate Purpose Public Impr.	9	....	....
7/19/61	Vero Beach, Fla.	1,200	Electric Revenue	22½	....	....
7/24/61	Glendale, Calif.	3,250	Sewer	10½	....	....
7/24/61	Mobile, Ala.	8,000	Auditorium & Hospital	16¾	....	....
7/26/61	Carlisle Borough Sewer System Authority, Pa.	1,200	Sewer (rev.)	30	3.75	3.75
7/26/61	Lexington, Ky., Mun. Impr. Corp.	1,900	Revenue Bonds	....	....	3.94
7/26/61	Michigan	55,000	Trunkline Highways	....	....	3.69
7/27/61	Attleboro, Mass.	170	Sewer	9¼	3.20	3.16
7/27/61	Onondaga Cty., N. Y.	5,700	Highway	9	3.00	....
7/27/61	West Goshen Sewer Authority, Pa.	1,000	Sewer Assessment (rev.)	7	3.00	4.20
7/29/61	South Blount Cty. Utilities Dist., Tenn.	1,000	Waterworks System (rev.)	22½	4.38	....
7/31/61	Charleston, W. Va.	4,000	Sewer (rev.)	....	....	3.95
8/ 1/61	Berlin, Conn.	1,300	Funding Bonds	10½	3.40	3.39

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Length of Load Area	87½ inches
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Here's the newest, most economical walk-in delivery van you can buy—the sensational new 'Jeep' Fleetvan. Ideal for multi-stop delivery use! The Fleetvan parks easy. Maneuvers easy. New safety-designed front lets the driver see the road just a short way in front of the bumper. And the Fleetvan gives top gas economy too. These are just a few of the reasons the U. S. Post Office purchased over 6,000 'Jeep' Fleetvans. For full information on the 'Jeep' Fleetvan write to Mr. R. J. Kreusser, Fleet Sales Manager, Willys Motors, Inc., Toledo 1, Ohio.

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New Hydraulic Refuse Body

M-B Corp., New Holstein, Wis., reports that its first hydraulically-operated refuse collection body, the "Pack-King," has been under development for two years, with pilot models test-operated on typical collection routes. The unit loads from the side, has an all-hydraulic packing mechanism located up front in the body, above the loading area. Packing pressure of 10 pounds per square inch is developed.

While dumping, two telescopic hydraulic hoists raise the body. Large rear safety doors are opened from the side, keeping crew members away from the load.

Pack-King is available in four sizes—14, 16, 21, and 24 cubic yards and can be mounted on any truck chassis. It's adaptable to the M-B Contain-O-Pak collection system.

Leaf and Litter Collector

The redesigned and engineered Tecorp leaf and litter collector fits snugly above the cab of the Truxmore Pakker and becomes an integral part of the Truxmore Pakker collection unit. With it, leaves, twigs, small branches, trash and paper can be easily vacuumed from gutter or side curbing and from along the street. And on the same trip large bundles of brush, limbs or long branches can be loaded through the Pakker side door. When the leaf collecting season is over, the Tecorp unit can be detached and stored. For additional information, write Truck Equipment Corp., Midlothian Turnpike, Richmond 35, Va.

M-F's First Diesel Tractors

. . . are the 203 and 205 Series. Both are powered by a 152-cubic-inch, 3-cylinder diesel engine. Developing 40 hp, both average less than 1½ gallons of diesel fuel per hour. The 205 is said to be the only one in its class with instant reverse and torque converter. For details, write Massey-Ferguson Industrial Division, 12601 Southfield Rd., Detroit 32, Mich.

Assures Maximum Efficiency at Intersections

Crouse-Hinds Co., Syracuse, N. Y., has developed an electronic traffic control device built to the new concept of *immediate response to traffic need.* It is designed to allow automobile traffic to move with greater speed and safety at heavily-travelled intersections and to eliminate traffic jams.

In the photo at the right, Robert J. Sloan, president of Crouse-Hinds Co., demonstrates the advantages of the company's new ETC-909 electronic traffic controller, pointing out that:

• The new unit permits a flexibility and efficiency in handling left turn traffic which has previously been impossible. With the ETC-

(Continued on page 239)

NEW PAVEMENT LOOKS ITS BEST when "vacuum-swept" with the maneuverable Tennant "100."

SWEPT AS CLEAN AS YOUR OFFICE FLOOR. Tennant's huge 540-square-foot filter captures virtually *all* the dirt . . . even particles as fine as 5 microns, far smaller than the human eye can see. The Tennant "100" sets a new cleaning standard.

TENNANT picks up dirt that non-vacuum sweepers miss

• *ultra-clean* • *no dust nuisance* • *easy to use*

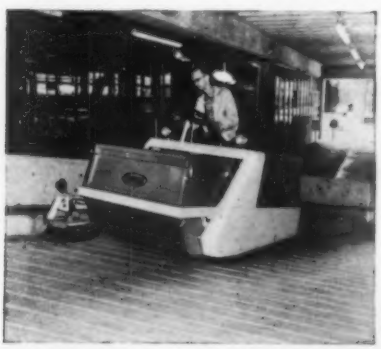
If you have new pavement, there's no cleaner, easier way to sweep it than by the *new* system developed by TENNANT—"*precision*" *vacuumized sweeping*—expressly designed for towns where cleanliness counts most.

Cleans in 1 pass. Engineered to meet new sweeping standards, a TENNANT Sweeper actually *lifts* the dirt, even from crevices and pores in pavement.

No dust, no water—*another first!* The brooms are vacuum-enclosed for ultra-clean work on modern streets. Ends complaints of usual dust nuisance. Cannot be compared with any other street sweeping system.

Easy to use. Short (10'2") turning radius gives unmatched maneuvering ease . . . allows economical sweeping of areas usually requiring hand work. No special skills needed to operate.

WRITE TODAY. *Find out if your town can qualify for this NEW kind of sweeping*—with its many advantages. G. H. Tennant Co., 751K N. Lilac Drive, Minneapolis 22, Minnesota.



FOR MORE CONGESTED AREAS such as parking lots, airport ramps, driveways, walks, arenas, the Tennant 85 Vacuumized Sweeper is ideal. Starts, stops and reverses instantly; turns in a 65" radius. Cleans a 53" path; sweeps over 100,000 square feet per hour in open areas. Hydraulic-powered.

TENNANT

VACUUMIZED SWEEPERS

and other specialized maintenance equipment

Power Sweepers | Traffic Line Erasers | Concrete Routers

(Continued from page 237)

909 left turns can be made from either direction independently, or in both directions simultaneously, without interrupting or delaying the flow of non-conflicting traffic. This takes the present danger and delay out of making left turns and prevents cars from jamming up at intersections while waiting for a chance to turn left against on coming traffic.

• It eliminates the delays caused when cars are forced to wait for traffic signals to go through pre-set time cycles. ETC-909 meters the flow of traffic electronically and instantly puts the green light where it is needed. The new controller can switch the green "go" signal from any lane or combination of nonconflicting lanes to any other directly. There is no "green light" time wasted on lanes where there is no traffic.

• The ETC-909 keeps intersections clear by allowing cars to move in as many as four nonconflicting directions at one time, swiftly, smoothly and in perfect safety.

The new Crouse-Hinds electronic traffic controller may be used with existing traffic signals as well as in completely new installations. The modular construction of the controller, using simplified plug-in connections, allows the wiring and timing mechanisms to be removed for servicing easily.

The ETC-909 will move traffic in any combination of nonconflicting directions, up to four, simultaneously. Typical examples include:

• Simultaneous left turns from opposite directions

• Simultaneous left turn, right turn and straight through from one direction

• Simultaneous straight through in two directions

• Simultaneous straight through and right turn from two directions

• Simultaneous left turns and right turns from four directions

Municipal, county and state traffic engineers desiring further information should write directly to the company.

New Lease Plan for Office Equipment

It is now possible to lease Remington Rand Systems office equipment, using it as though it were your own and paying only a monthly rate.

At the end of the primary lease term, the lease can be renewed at a a yearly cost slightly more than the monthly rate, or the equipment can be turned in for the latest model under another plan offered by the Company.

Equipment included in the leasing plan are office furniture, vertical filing equipment, microfilm equipment, insulated products, and Library Bureau equipment. For details, write REMINGTON RAND SYSTEMS, 122 E. 42 ST., NEW YORK 17, N. Y.

Announces Construction Equipment Line

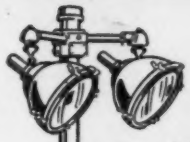
The Earthripper 5000, a fully-hydraulic backhoe with ½-yard capacity, 15½-foot digging depth, and continuous 360° rotation is one unit in a new line of heavy-duty construction equipment announced by Cabot Corp., Machinery Division, Pampa, Texas.

The "5000" has 180° action at the digging bucket. According to the manufacturer, the bucket is quickly changed from backhoe to shovel operation. Digging, shoveling, or backfilling buckets are available in various sizes.

Its hydraulic system features a 125-gpm triple tandem pump directly connected to a 320-cubic-inch gasoline engine. Diesel engines are available.

The carrier can travel any place a truck can travel, at normal truck speeds. It has a 6 x 4 rating of 33,500

(Continued on page 240)



For LOW-COST OUTDOOR LIGHTING!
the Original
HOPE
MALLEABLE IRON METAL-PIPE POLE BASE

A Rugged Support for Threaded Pipe Uprights With Chamber for Splicing and Grounding.

Turn galvanized pipe into threaded hub of galvanized base. Top off with fixture. Install over embedded anchor bolts and conduit stubs. Splice and ground through hand-hole. Four sizes: 2", 2½", 3", 4". Plain or 3-pole receptacle cover. Bulletin #25.

CONSULT YOUR ELECTRICAL WHOLESALERS OR PHONE ONE OF OUR AGENTS BELOW!

Ala.	Birmingham	ALpine 1-7979
Ala.	Mobile	GReenwood 1-5621
Ark.	Pine Bluff	JEfferson 4-5932
Cal.	Los Angeles	HUbbard 3-7931
Cal.	San Francisco	EXbrook 2-6621
Colo.	Denver	AComa 2-8001
Fla.	Jacksonville	RAymond 5-3671
Fla.	Miami	PLaza 7-1041
Ga.	Atlanta	TRinity 5-4848
Ill.	Chicago	FRanklin 2-9854
La.	Baton Rouge	DIckens 2-2873
La.	New Orleans	TUlane 5-5207
Mass.	Wellesley	CEdar 5-6815
Mich.	Royal Oaks	LIncoln 3-1384
Miss.	Jackson	FLeetwood 5-8305
Mo.	Kansas City	VIctor 2-8875
N. C.	Greensboro	BRoadway 5-3775
N. J.	Newark	MArket 3-6554
New Mex.	Carlsbad	TUlip 7-2303
N. Y.	Fayetteville	NEptune 7-9205
N. Y.	New York City	BO 9-8845
N. Y.	Williamsville	PLaza 4592
Ohio	Cleveland	PRospect 1-6120
Ohio	Dayton	BAldwin 4-9813
Oregon	Portland	BRoadway 2671
Pa.	Philadelphia	DEwey 4-6800
Pa.	Pittsburgh	LOcust 3-6262
Tenn.	Memphis	WHitehall 8-0496
Tex.	Dallas	RIverside 1-6241
Tex.	El Paso	PRescott 2-2881
Tex.	Houston	CApitol 7-4173
Va.	Va. Beach	GArden 8-3837
Wash.	Bellevue	GLencourt 4-0566
Wis.	Milwaukee	UPtown 1-4900

© 1959

HOPE ELECTRICAL PRODUCTS CO.

53 Long Ave., Hillside, N. J., ELizabeth 4-7837

Now a low cost sign and bracket assembly that meets LYLE standards for quality and durability!

Caught in a squeeze between quality and price in your street signing program? Here's your answer! LYLE has developed a special one-piece alloy aluminum bracket assembly, to give you a lower purchase price and lower installation cost. The bracket is matched to LYLE's standard style name plates (it contains magnesium for greater tensile strength without brittleness) and is an important addition to LYLE's wide variety of highly readable sign styles and exceptionally durable materials.

LYLE SIGNS STILL SPARKLE LIKE NEW AFTER YEARS OF SERVICE!

LYLE craftsmanship and quality control puts extra long life into every sign. Many "old-timers" are still in service because they look like new and there's just no need to replace them! (Incidentally, LYLE keeps all patterns and dies in stock so it's easy to expand your sign program without loss of uniformity 15 to 20 years hence.)

COMPLETE "ONE ORDER" SOURCE FOR EVERY SIGN NEED

In addition to street signs and brackets, LYLE can fill your needs for all types of traffic and highway signs, miscellaneous signs such as "school", "hospital", "park", as well as special signs for special needs. You name it— LYLE can do it, thus simplifying your ordering job *and* giving you assured quality on every public sign in your community.

LYLE GREEN is going great!

Like the new green and white combination on street name signs? LYLE offers several shades of green—reflectorized or not. Most LYLE street name plates—aluminum or steel—are available in this combination . . . at no extra cost!

Send for the new, fully illustrated LYLE Street Name Sign Catalog.

Lyle **SIGNS, INC.**
2722 University Avenue S. E.
Minneapolis 14, Minnesota

Purchasing

(Continued from page 239)

pounds gvw or a 6 x 6 rating of 35,000 pounds gvw.

For additional information on the 5000 and the Earthripper line, write CABOT CORP., MACHINERY DIVISION, BOX 1101, PAMPA, TEXAS.

Facsimile Communications System

A system for rapid transmission of graphic data has been introduced by the Fairchild Camera & Instrument Corp., Industrial Products Division. It is called Scan-A-Fax and consists of a flat-bed scanner-transmitter and a recorder. As both units are transistorized, little or no heat is generated, permitting continuous operation. Transmission speed is 1.8 linear inches per minute; twice this speed can be obtained by using microwave.

"Rapid Index" allows the operator to selectively scan any portion of a letter, chart, log or graph, skipping unnecessary data. American Airlines, which has had the system on a test basis in its cargo handling department, says that this feature alone increased copy handling capacity by over 40%.

Major fields which find immediate use for the Scan-A-Fax are engineering, criminal investigation and transportation. For details, write FAIRCHILD CAMERA AND INDUSTRUMENT CORP., INDUSTRIAL PRODUCTS DIVISION, 580 MIDLAND AVENUE, YONKERS, N. Y.

Scan-A-Fax facsimile communications system accepts memos, charts and photographs 8½ inches wide of almost unlimited lengths at speeds of 1.8 inches to 3.6 inches per minute, depending on type of carrier transmission used.

Purchasing

Improved Brush Chipper

Asplundh Chipper Co., Chalfont, Pa., reports that the new large feed table on the Asplundh Chipper permits easy feeding from the sides, and allows smooth passage of bulky branches. A blower attachment is available as optional equipment. It eliminates the chute stoppage of fine brush and foliage, expedites the dispersion and discharge, and is easily installed on any chipper.

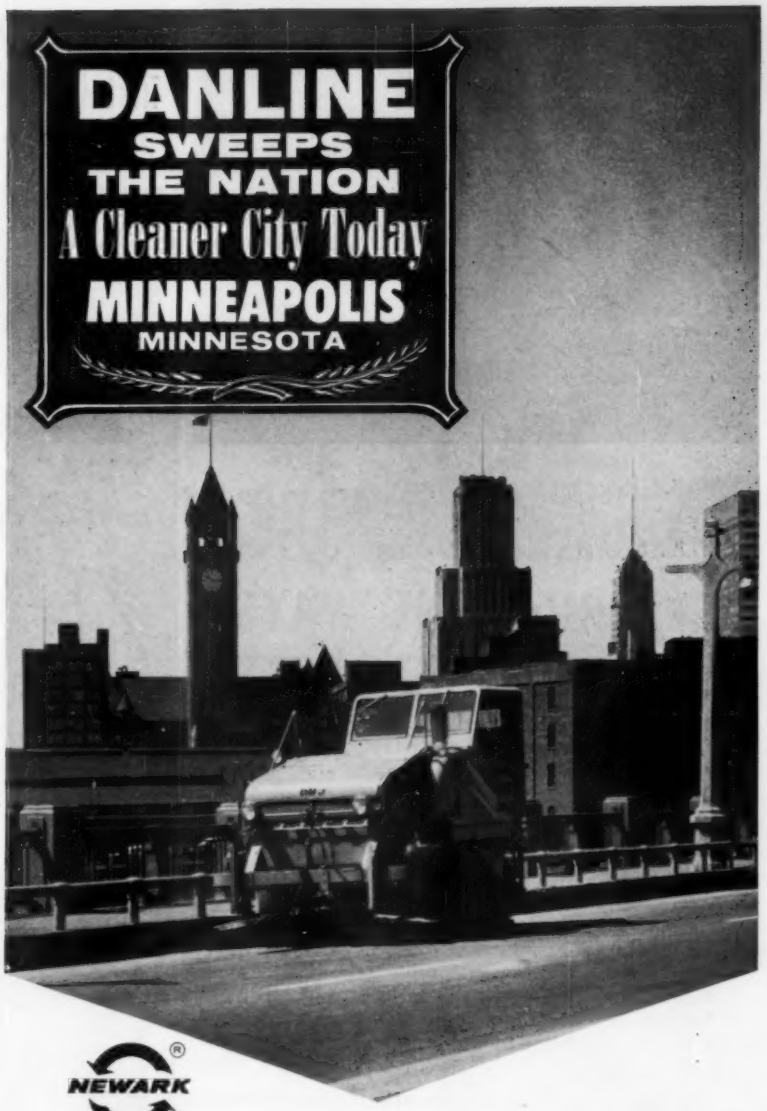
Volkswagen Option

This swivel seat is available as optional equipment for Volkswagen panel trucks. It is said to reduce operator fatigue and the danger of the operator stepping out into traffic through the front street-side door, and to give the driver ready access to the truck's 170-cubic-foot load compartment. For details, write Volkswagen of America, Englewood Cliffs, N. J.

Rugged Rotary Cutter

Servis Equipment Co. of Dallas, Texas, has introduced a new, heavy-duty rotary cutter, designed especially for use on highway right-of-ways, parks and pastures. Designa-

(Continued on page 243)

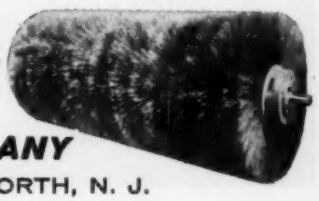


NEWARK®

The Mayo Foundation, flour mills, dairy products plants, agricultural equipment manufacturers — and 1961 location for the APWA show — Minneapolis serves the nation in many ways. It cares for its streets in only one — with Danline wire sweeping brushes. Mr. Ray J. Helwig, Supt. Equipment Div., says, "When it comes to real heavy sweeping the Danline is a superior broom. We use them on our sweepers because they are sturdy and durable, giving us a definite advantage in heavy spring clean-up and chip removal. There is no question but that the Danline broom is efficient and a money saver on heavy sweeping." Danline is the answer to your sweeping problem too. We invite your inquiry.

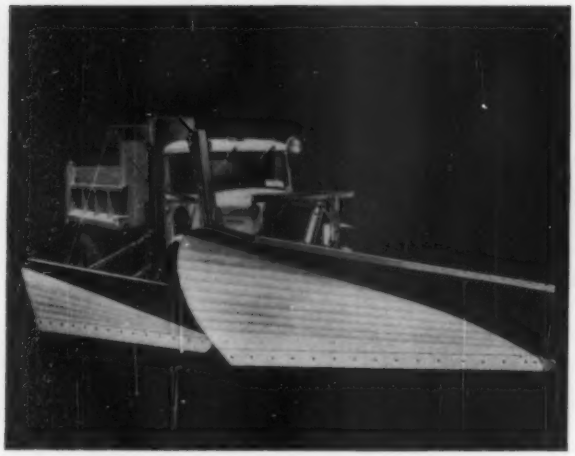
59-66

Leadership Proved Through Performance!



NEWARK BRUSH COMPANY

260 MICHIGAN AVE., KENILWORTH, N. J.



NEW FRINK
S-SERIES ONE WAYS CUT PLOWING COSTS

INCREASED CURVATURE, HIGHER FRONT END, BOOST EFFICIENCY

New Frink 430-S and 440-S (8′ and 9′ cleared widths) one way plows offer new design features that give increased performance and more efficient snow removal. The result of two years development and testing, these newest **Frink** plows are designed **without** deflectors, utilize regular 400 Series drive frame and trip mechanism for greater parts standardization.

Increased moldboard curvature and taper throws snow farther and wider at high speeds—without forming high banks that cause drifting. At low speeds snow is neatly windrowed for easy pickup by loader or rotary.

Redesigned front end has increased height compared to previous models. Lower discharge end gives greater operator visibility where it means the most—on the right hand side.

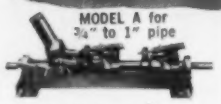
For complete details on new **Frink one-way plows,** write Dept. AC 961

FRINK SNO-PLOWS, INC.

Engineers of Every Major Advance
In Modern Snow Plow Construction

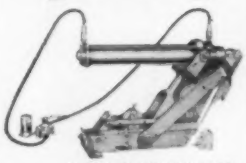
Frink Sno-Plows Inc., Clayton, New York
In Canada:
Eastern Steel Products Co., Preston, Ontario

Trojan Pipe Puller & Pusher
installs or renews pipe under pavement *in less time* than required by any other machine!



MODEL A for ¾" to 1" pipe

MODEL B for 2" pipe and under



MODEL B AIR POWERED for ¾" to 2" pipe

Exclusive continuous action, which eliminates all resetting of grip, does the trick!

The Trojan combines pushing and pulling operations in one machine—eliminates all time-killing resetting of grip—keeps pipe continuously moving. Does the job at lower cost—in far less time.

Model A weighs 65 lbs.—requires only 5′ trench. One man can easily install the average service. 15 tons of pushing pressure possible. Is also available for ½" pipe.

Model B (manual, hydraulic or air powered) needs only a 6′ trench—has 3 speeds for different soils—is reversible in 30 seconds. Push pipe comes in 30" lengths, assures straight travel.

Write today for full details!

The TROJAN Manufacturing Co.
1113 Race Drive • Troy, Ohio

SAND BLAST
the easy RUEMELIN way!

A practical Sand Blast Generator for all types of outdoor cleaning work. Removes rust scale, paint. Cleans bridges, removes laitence from cement. Cleans ready-mix trucks and highway equipment prior to re-painting. Equipped with remote control with deadman valve for stop and start *at the nozzle!* Wet type nozzles also available if desired. Portable units can be equipped with hi-speed mountings for highway trailing.

Write for descriptive bulletin.

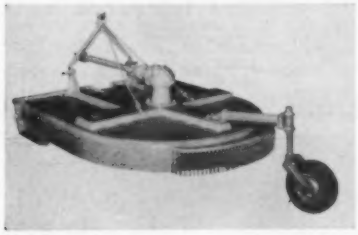
RUEMELIN MFG. CO.
3902 N. PALMER STREET MILWAUKEE 12, WIS., U. S. A.
MANUFACTURERS AND ENGINEERS — SAND BLAST AND DUST COLLECTING EQUIPMENT — WELDING FUME COLLECTORS

A8-9403-1/9A

(Continued from page 241)

tion for this cutter is Model CY-60.

According to the manufacturer, the cutter's high-speed gear box permits faster travel of tractors, with a resulting clean cut, and optional open or closed rear end, smooth under section and rolled corners of cover plate provide for free flow of cut materials.



The Cyclone is recommended for cutting brush up to 3 inches in diameter, and is built with heavy-type ½ inch x 4 inch rotating offset blades and heavy 3/16-inch thick steel "dish-pan" stump jumper style round blade carrier. It is available in lift or pull type, with dual wheels on side or to the rear of pull type, and single puncture proof tapered roller bearing tail wheel or lift type.

For additional information on the CY-60, write to Servis Equipment Co., 1000 Singleton Ave., P. O. Box 1590, Dallas, Texas.

Built-In Ignition Noise Suppression

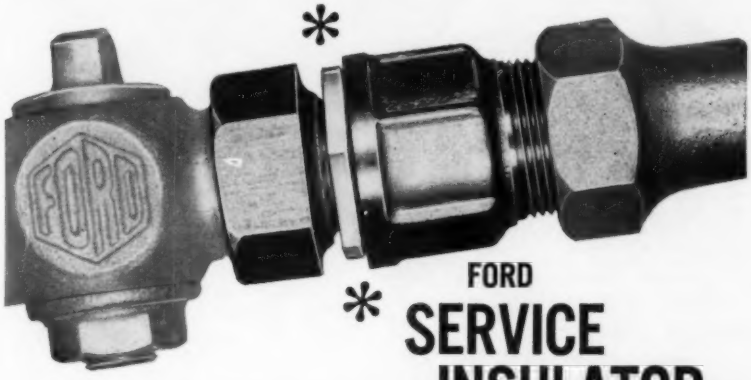
A new product extends the operating range of two-way municipal radio systems and provides more reliable reception in heavy traffic areas. It is known as "Extender" operation and is available as models of Motorola's transistorized Motrac low band (25-50 mc) mobile radio line. As shown in the above photo, a 3-position switch on the radio control head enables users to select automatic ignition noise suppression, intermodulation rejection, or standard receiver operation. For additional information, write Motorola Inc., Communications Division, 4501 W. Augusta Blvd., Chicago 51, Ill.

Self-Propelled Tamping Roller

Shovel Supply, Company, Inc. P. O. Box 1369, Dallas 21, Texas, states that the Ferguson Alley Special was designed to meet a growing demand for a compaction roller for city streets and alleys, shoulders and widening work on highways.

Model SP-84 is under 8 feet in width, and can be hauled without dismantling and without permit. It

(Continued on page 244)

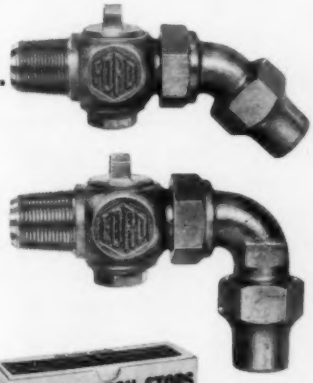


FORD
SERVICE INSULATOR

This simple insulating unit, which includes a nylon dielectric bushing, can be attached to the outlet of a standard corporation stop. Connects to ordinary copper tubing with standard nut. Provides positive service insulation without gaskets or loose parts. Requires no special tools.

Always Specify
FORD CORPORATION STOPS..
made of finest water works brass.

Precision machined to accurate dimensions. Generous weight with good finish. Thick - substantial operating head. Ample wrench flat with sharp corners. Straight - Eighth - or Quarter bends available in ¾" and 1" sizes.



This attractive, strong Ford carton holds five ¾" or four 1" size Stops for easier handling, simpler storage and better protection from dirt and damage.

FORD for *better* water services

THE FORD METER BOX COMPANY, INC., Wabash, Indiana

NOW... FOUR BACKHOE-LOADERS

from

PARSONS

MODEL 1000	MODEL 1200	MODEL 1300	MODEL 1500
10-ft. Backhoe-Loader	12-ft. Backhoe-Loader	13-ft. Backhoe-Loader	15-ft. Backhoe-Loader

Now Parsons offers four backhoe-loaders: the new 10-ft. Model 1000 and the 13-ft. Model 1300 . . . plus the 15-ft. Model 1500 and 12-ft. Model 1200 announced earlier . . . broaden the Parsons line of field-proved utility backhoe-loaders to four models. These outstanding attachments fit all popular tractors, new or used. They're field-proved by contractors, utilities, municipalities, under toughest conditions. Send coupon for full details!

With all these "More-for-your-Money" Features:

Live-Circle Hydraulic Loop • Fast Cycling Action • Non-Skid Stabilizers • Cushioned "Dock" Fender • 3-Position Dig-All Buckets • Fit All Popular Tractors.

PARSONS COMPANY
Newton, Iowa

A Division of KOEHRING Company

Please send me literature on the Parsons Backhoe-Loader Line:

NAME_____

COMPANY OR DEPT._____

STREET_____

CITY_____ STATE_____ SIIIAC

Purchasing

(Continued from page 243)

is water ballasted (pressures up to 495 psi can be obtained) and comes equipped with 70-hp gasoline or diesel power. Rolling speeds up to 5 mph are obtainable.

The roller's 5-speed quickly reversing transmission permits it to operate equally well in either direction, eliminating the necessity for turning. For descriptive literature and additional information, write directly to the company.

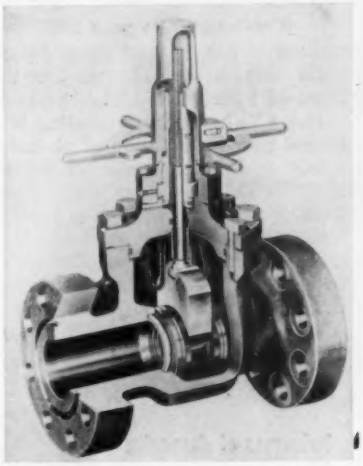
Cuts Pumping Costs

Homelite, Port Chester, N. Y., has introduced a new automatic idle control accessory that cuts pumping costs by permitting the engine to run at full speed only when there is water to pump. The control has only three main parts: pressure-sensing tube, activating diaphragm and throttle rod. It is available for Homelite's 2- and 3-inch 2-cycle engine-driven centrifugal pumps and new 1½- and 2-inch 4-cycle engine-driven centrifugals.

Sewer Cleaning Test

At a recent demonstration in Marquette, Mich., this bucket machine demonstrated how effectively it could remove congestion, sand and grit from sewers at lower cost. Thomas Mahoney (foreground), an O'Brien representative, explains the operation to Howard L. Coppens, Marquette street superintendent, while in the background, are Ray LaPorte and Harold Gustafson of the Marquette street department. The machine is a product of O'Brien Mfg. Corp., 5632 Northwest Hwy., Chicago 31, Ill.

Plastic-Coated Valve Handles Abrasive-Corrosive Liquids



Plastic-coated resilient-seat gate valves with high resistance to abrasion and corrosion have been introduced by Edward Valves, Inc., subsidiary of Rockwell Mfg. Co. The steel valves are suitable for process piping where abrasive-corrosive liquids and slurries are handled, such as in sewage and industrial waste treatment plants.

The valves are available with screwed ends 2-, 3-, and 4-inch sizes, rated 2000-pounds WP (working pressure) (4000-pound test) or 3000-pound WP (6000-pound test). They are also available with flanged ends in the same sizes for 1440-pound WP (ASA 600-series flanges) and 2160-pound WP (ASA 900-series flanges).

According to the manufacturer, valve wear is largely confined to the replaceable seat insert and gate, both of which can be replaced easily when necessary while the valve body remains in the line. The gate is heat-treated chromium-molybdenum steel, ground smooth and hard-chrome plated for abrasion resistance. The gate fits into the seat insert, which is made of resilient Buna-N synthetic rubber integrally

(Continued on page 246)

Clean Water Meters now in FIVE Minutes —

with VAPOR BLAST **Liquid Honing**

...no acids, solvents, scrapers, wire brushes

Meters and parts at Milwaukee Water Works before and after Liquid Honing.

Modernize *your* meter cleaning — with Vapor Blast LIQUID HONING! Removes dirt, discoloration, scale, paint from corners, crevices, internal parts, chambers, thoroughly and effectively, with *no possibility* of scratching, scoring, or change in precision tolerances. Completely cleans a meter and all parts in less than FIVE minutes . . . Delivers cleaner, brighter water meters that look like new — to build customer satisfaction and confidence in your water meter department *economical* replacement program.

VB Liquid Honing is proving itself in Milwaukee, Cincinnati, and in towns in New Jersey, Georgia, Florida. Get the whole time-saving, money-saving story on VB LIQUID HONING in meter cleaning — or send a meter for Free laboratory demonstration cleaning.

*Vapor Blast and Liquid Honing are Trademarks

Representatives—Good Territories Available.

VAPOR V-B BLAST

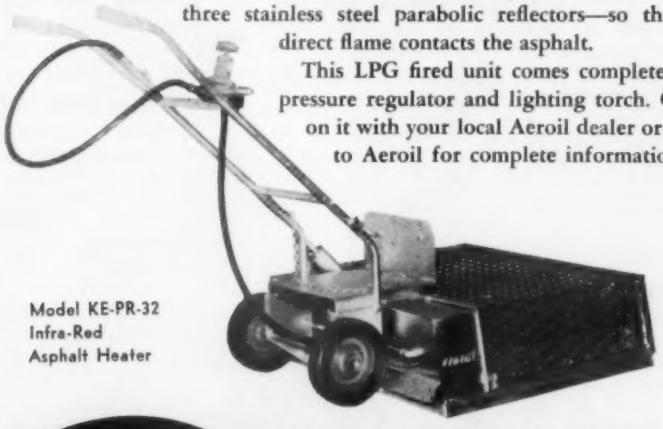
VAPOR BLAST MFG. CO.

3037 W. Atkinson Ave., Milwaukee 9, Wisconsin

INFRA-RED PATCH HEATER

Now you can get fast, effective heating for asphalt repairs without burning or damaging the surface being heated. The Aeroil KE-PR-32 heater utilizes infra-red radiation transmitted indirectly to the surface by three stainless steel parabolic reflectors—so that no direct flame contacts the asphalt.

This LPG fired unit comes complete with pressure regulator and lighting torch. Check on it with your local Aeroil dealer or write to Aeroil for complete information.



Model KE-PR-32 Infra-Red Asphalt Heater

Send for complete Aeroil municipal catalog today.

Aeroil SINCE 1907

MUNICIPAL EQUIPMENT

AEROIL PRODUCTS CO., INC.

69 WESLEY ST., SOUTH HACKENSACK, N. J.

4648 S. Western Ave. Chicago 9, Ill.

3217 Union Pacific Ave. Los Angeles 23, Calif.

BITUMINOUS DISTRIBUTORS

PATCHING EQUIPMENT

KETTLES

ASPHALT TOOLS

CUT BACK SPRAYERS

"FLEXIBILITY" IS AUTO CRANE!

AUTO CRANE can be "CUSTOMIZED" to do any SPECIAL JOB

This is an on-the-job photograph of an actual custom-ized Model ROC-24-LC installed in a leading petroleum company's equipment welding van. Only the boom had to be changed!

• • • • •

In the above picture, the lone operator can lift an LP Gas tank to truck-bed height and place it in front of the welding unit in the back of the truck in one simple, remote-controlled operation.

All this and SAFETY too!

ALL WE NEED ARE YOUR REQUIREMENTS

Just write and tell us what your need is. Our engineers will work out a suggested plan for you.

Write today for illustrated literature, specifications and price lists on all models of AUTO CRANE.

Never a strain-with Auto Crane

AUTO CRANE Company

1214 S. NORWOOD • TULSA 12, OKLA.

Purchasing News

(Continued from page 245)

molded to heavy steel rings. Maximum service temperature for the Buna-N insert is 250°F.

The EValcoat plastic coating is a special new formulation of phenolic, epoxy and other resins baked on the internal valve surfaces. Field tests show that the coating resists undercutting and peeling even if it is mechanically broken. Noncoated valves are available for applications where corrosion and erosion are not a problem, states the manufacturer.

Large unrestricted openings from the line into the bonnet cavity eliminate bonnet clogging in slurry service. Flow keeps the bonnet flushed free of loose particles. Enclosed low-pitch stem threads permit quick, easy closing and opening. Impactor handwheels permit tight closing.

For additional information, write EDWARD VALVES, INC., SUBSIDIARY OF ROCKWELL MANUFACTURING CO., EAST CHICAGO, ILL.

Manual Angle Dozer Blade

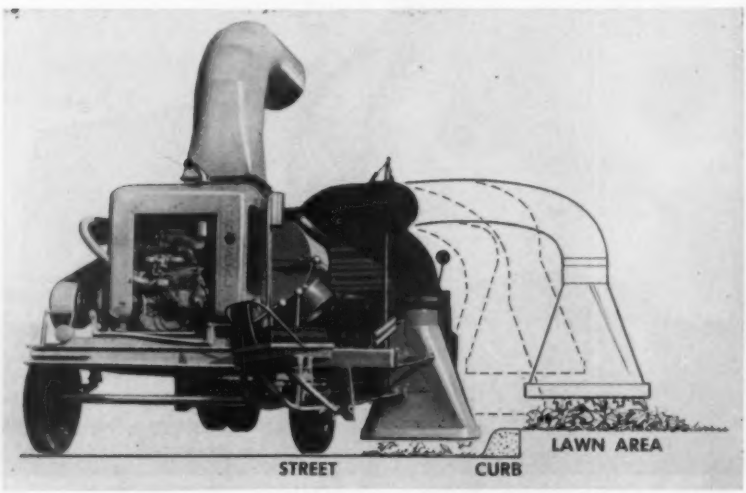
New 700 angle dozer blade is designed to mount on I-H crawlers in the below 50-hp class. Manual controls allow it to do the same work as a hydraulically-controlled unit, reports International Harvester Co., 180 N. Michigan Ave., Chicago 1, Ill.

Introduces Vacuum Leaf Loader

Model LL-HCN features a hydraulically-controlled nozzle that allows leaves to be collected from grass area above curb without damage to lawn or any planting. The nozzle, which moves up, down, left or right, can be made to hover above this area. An automatic nozzle tripping design prevents damage to the nozzle and/or object encountered, according to the manufacturer, Gledhill Road Machinery Co.

The blower for this new loader is rated at 10,000 cfm. Wind goes into the gutter nozzle at about 100 mph, but exits at only three or four mph. At this rate dust settles

(Continued on page 249)



Converts any City Vehicle to Ice Control Service

BAUGHMAN SAFETY SPREADER

NOW—with FINGERTIP SWITCH CONTROL right at the Dashboard

Tow trucks, maintenance trucks, auxiliary fire units, squad cars — any unit of your city fleet can be converted quickly to emergency ice control service. Hook up the Baughman Safety Spreader with a trailer hitch, make one electrical connection, and you are ready to spread sand, salt, cinders or other material on snow or ice covered streets. With multiple units you can quickly protect the entire community.

Write for Bulletin A-466.

The Baughman Safety Spreader can now be controlled by the driver without leaving the cab. A portable switch that can be mounted anywhere on the dashboard activates a vacuum cylinder which engages or disengages the clutch. With the switch turned ON, a belt conveyor discharges the sand, salt or other materials onto the spinner or distributor.

Simple in design, economical in initial and operating cost, the Baughman Safety Spreader puts fast, efficient ice control within any city budget.

BAUGHMAN — TRANSPORTS-SPREADERS-CONVEYORS

BAUGHMAN MANUFACTURING COMPANY, INC.

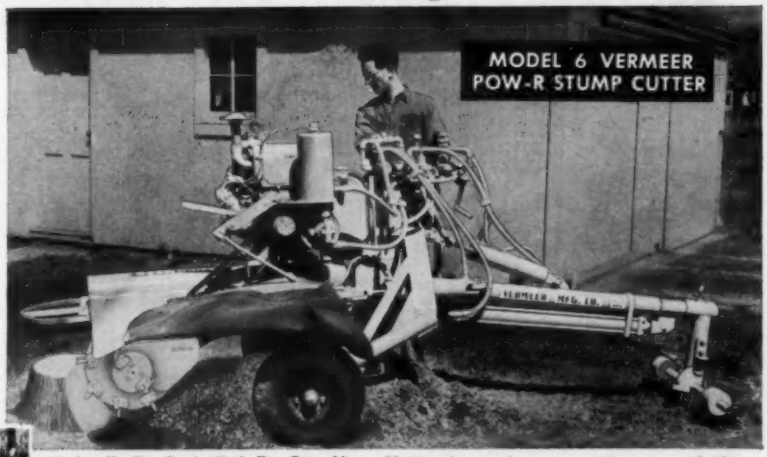
307 SHIPMAN ROAD • JERSEYVILLE, ILLINOIS

6131

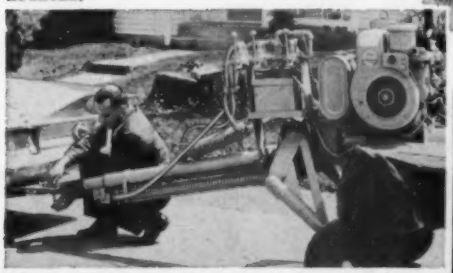
Vermeer Introduces New Pow-R-Stump Cutter Model

Smaller, Low-Cost, Easy-To-Move Model 6 Rips Out Stumps In Minutes

A new, smaller model is the latest addition to the well-known Vermeer Pow-R-Stump Cutter line. The hydraulically operated Model 6 is specifically designed for low cost stump removal in small municipalities, utilities, cemeteries, golf courses, parks and by tree service firms. Rips out any size stump in minutes . . . down 6" below the ground surface. Ideal for those hard-to-get-at places, through gates, close to buildings, fences, trees and shrubs. An ideal companion unit for Model 10 and Model 18 owners. The Pow-R-Stump Cutter is registered under U. S. Patent No. 2912022.



Hydraulically Controlled By One Man—Photo above shows control center of the Model 6. Just 3 levers control all cutting movements of the cutting wheel. No handwork, no back-breaking labor, no chopping.



Easy To Transport—pull the Model 6 from job to job with any car, truck, tractor or jeep. Only 36" in transport width. May be maneuvered into position for cutting or trailing by one man.

MAIL COUPON FOR ALL THE FACTS

Please send me complete information, literature and prices of the new Model 6 Pow-R-Stump Cutter.

NAME .....

DEPT. OR TITLE .....

FIRM .....

ADDRESS .....

CITY ..... STATE .....

VERMEER MANUFACTURING CO.

1452 W. WASHINGTON • PELLA, IOWA

USE YOUR PRESENT EQUIPMENT with *SNO-SCOOP*

the practical - economical - efficient SNOW REMOVAL UNIT

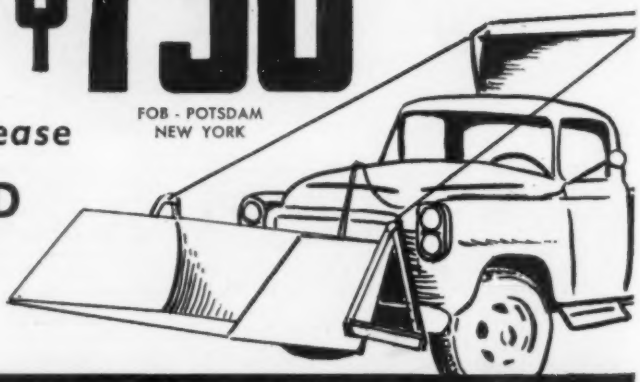
- *FITS ANY TRUCK*
- *Operates from standard dump truck hydraulic lift mechanism*
- *Raises and dumps with ease*

$750

FOB - POTSDAM NEW YORK

2¼ YARDS PER LOAD

Operated entirely by the truck driver. No other equipment to buy. Fast, efficient, all welded construction.



POTSDAM WELDING & MACHINE CO., INC.

145 MAPLE ST. POTSDAM, N. Y.

Del Webb's fabulous "SUN CITY," Arizona chooses... RAIN BIRD

Sun City's Recreation Unit No. 1, shown here, features the Arts and Crafts Center, shuffleboard courts, bowling greens, swimming pool and cabanas. The recreational grounds and 18 hole Championship golf course are protected and kept green by quality Rain Bird products. Rain Bird #37 Rotor Pop-Ups shown, while rose garden in foreground is irrigated by Rain Bird Bubbler Heads.

Rain Bird 37 Rotor Pop-Up

Nearly 3000 modern "Retirees" are living and enjoying an active retirement in this completely planned community near Phoenix. Much of the beautifully landscaped grounds and golf courses is irrigated by Rain Bird underground Systems. Living amid the blooming roses, rich green turf and full shrubberies, Sun City residents find it difficult to believe that a cotton field occupied the area a year ago. To protect the huge investment in grounds and landscaping, Sun City relies on Rain Bird.

Protect your property and landscaping investment with custom-engineered Nelson-Rain Bird Underground Sprinkling Systems.

5799

IN MIDWEST AND EAST:
RAINY SPRINKLER SALES
DIVISION OF L. R. NELSON MFG. CO., INC.
609 West Lake Street
Peoria, Illinois

IN WEST:
NATIONAL RAIN BIRD SALES AND ENGINEERING CORPORATION
P. O. Box 547
Azusa, California

(Continued from page 245)

faster than the air moving out, thus making the filter unnecessary.

Full engine speed is used on wet leaves, but since dry leaves are very light, ½ to ¾ throttle of engine speed provides ample vacuum and pick-up. This lower speed minimizes any dust problem.

In addition to its primary function, the Gledhill Leaf Loader can be used for sewer ventilation, dusting, spraying, blowing, cleaning of materials like salt, cinders, straw and debris from streets and roads and for the collection of waste from refuse containers. It can also be used in fire demolition control and for smoke ejection.

Gledhill offers five models in its line of leaf loaders plus the leaf collector and a utility snake that is standard on some models and optional on others. For further details and literature on the LL-HCN and other models in the line, write to the GLEDHILL ROAD MACHINERY CO., GALION, OHIO.

Tractor Caravan for Snow Removal

This huge caravan of tractor carriers is headed for New York City. The MOW-POWER tractors were purchased on a competitive bid basis and will stop first at Menomonee Falls, Wis., for installation of cabs by Allen Industrial Products, then at Minerva, Ohio, for installation of hydraulically-controlled snow plows by Good Roads Machinery Corp. This shipment brings to 150 the number of crosswalk snowplows for the Department of Sanitation and 6 for the Department of Hospitals for the City of New York. It is with this type of wheel tractor snowplow that New York City was able to do its extraordinarily efficient job of snow removal during the unusually severe snow storms of 1960-61. The tractors are products of Motec Industries, Inc., Hopkins, Minn.

Speeds Soil Exploration

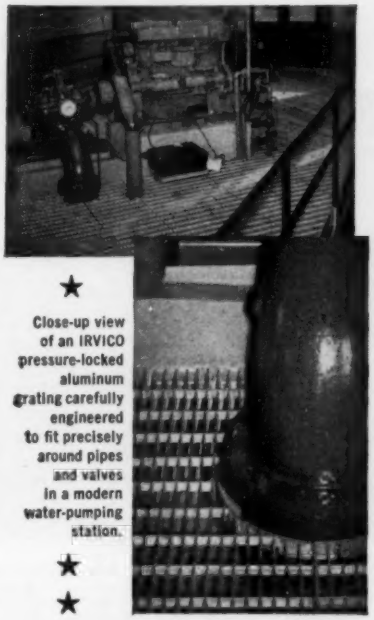
A new, fully-hydraulic-powered, soil sampling machine designed to take the guesswork out of determining soil structures has been announced by Giddings Machine Company, Fort Collins, Colo. It is called the Model GS, can be operated by one man and takes soil samples in small gravel, loose rock shale and similar soil structures. Samples have been taken to a depth of 35 feet. The manufacturer reports that even an unskilled worker can core at the high-speed rate of 10 feet in 60 seconds in favorable soils.

A new, traveling extension bar makes possible easier and faster depth sampling. A new 4-way leveling device and stabilizer assures positive vertical coring with less wear and strain on machine parts and transporting vehicle. Quick-mount design enables the user to attach or remove the machine from the average pickup truck in 10 minutes.

Model GS is said to be the only machine of its size and type with a hydraulic-powered rotary head. This head takes both augur and probe type tools. Undisturbed soil samples can be taken with any of

(Continued on page 251)

PRECISION AND SKILL



★ Close-up view of an IRVICO pressure-locked aluminum grating carefully engineered to fit precisely around pipes and valves in a modern water-pumping station. ★ ★

GO INTO A GOOD GRATING

When you specify IRVICO grating, you receive the benefit of engineering and manufacturing skill developed during more than 57 years of experience in the production of grating. Each IRVICO order is given careful engineering attention. Experienced shop craftsmen execute your order with finesse, and our inspectors permit no grating to be shipped unless it meets your specifications and our high standards. This insures high quality grating, an excellent fit, and no extra installation costs. Catalog on request

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IRVING SUBWAY GRATING CO., Inc.
Originators of The Grating Industry Est. 1902
Offices and Plants at:
5030 27th St., LONG ISLAND CITY 1, N. Y.
1830 10th St., OAKLAND 20, CALIF.

Visit Us at Booth B-58
APWA Show
Minneapolis Auditorium
September 24-27

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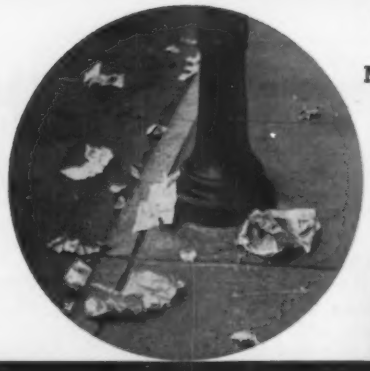

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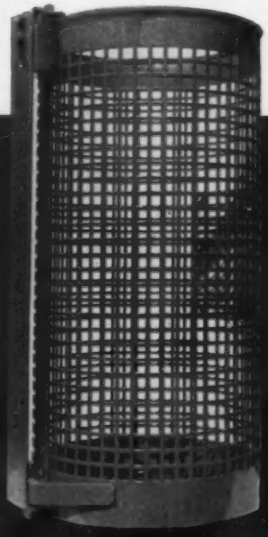


in the continuing battle against STREET LITTER

Priced low enough to enable frequent installation and attractive enough to invite public and official acceptance. The Howard Basket is open to the fresh air to eliminate putrefaction of litter. Pole mounting prevents damage from kicking and falling and also conserves valuable sidewalk space.

Readily mounted on any parking meter, street sign post, or utility pole. Theft proof. Basket locks in place on the holding bracket by special key supplied. Easily removed for emptying.

SPECIFICATIONS
Material: 16 gauge perforated steel.
Coating: tough, durable, epoxy.
Height: 24 inches.
Weight: 16 lbs. (Shipped in individual corrugated containers)
Diameter: 12 inches.
Cubic Content: 2,400 cubic inches.

HOWARD METALCRAFT
WOodring 5-9071
EMMAUS, PA.

Distributed By:
Dyar Sales & Machinery Co. Cambridge, Mass.
The Rodgers Company Hackensack, N. J.
Dominion Signal Co. Richmond, Va.
Koontz Equipment Co. Emsworth (Pgh), Pa.
Kar Trol Signal Co. Houston, Texas

Preview

1961 *SUPER HYDRODDER*

IN BOOTH B-17

the newest sewer rodder at the show!

PUBLIC WORKS CONGRESS & EQUIPMENT · SHOW · September 24-27

Champion-Stewart
HAMMOND, IND. • SYRACUSE, N.Y.

REDISCOVER

OZONE

OZONE is the perfect germicide, fungicide, deodorant, antiseptic and bleaching agent . . . equally effective in water, sewage and air.

Our Ozonators are designed to handle your specific requirements for years with only routine maintenance.

Your inquiry is invited.

AEC PROCESS

AMERICAN ELECTRO CHEMICAL PROCESS CORPORATION
1721 N. E. MIAMI COURT MIAMI 32, FLORIDA

Purchasing

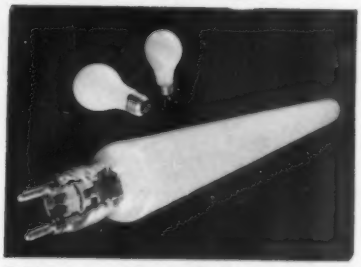
(Continued from page 249)

the probe tools offered, according to the manufacturer.

The Giddings Model GS can be readily converted to other uses. A cathead and drop hammer attachment is available for penetration tests; another attachment adapts it to concrete boring for determining the quality of paving laid and its condition after years of use. And with just two additional, low-cost parts, the Model GS can be converted to a work-saving fence post driver and puller.

To obtain complete information, request *Brochure* GS; write to GIDDINGS MACHINE CO., 403 PINE ST., FORT COLLINS, COLO.

New Lamp for Floodlighting



G-E's new, 6½-pound 6000-watt mercury-fluorescent lamp is shown here with two 60-watt household bulbs. Nearly 400 of the bulbs would be required to produce as much light as the giant tube, which is 5 feet long and 4 inches in diameter. The lamp has an operating life of 4000 hours and is reported by General Electric Co., Nela Park, Cleveland 2, Ohio, to be the nation's largest and most powerful for floodlighting jobs. The lamp is suitable for floodlighting parking lots, public squares, plazas, pedestrian malls, shopping centers.

Research and Development Center Opens

THE LOCK JOINT PIPE COMPANY has a new $600,000 Research and Development Center totalling 23,000 square feet and adjoining its branch manufacturing plant at Wharton, N. J.

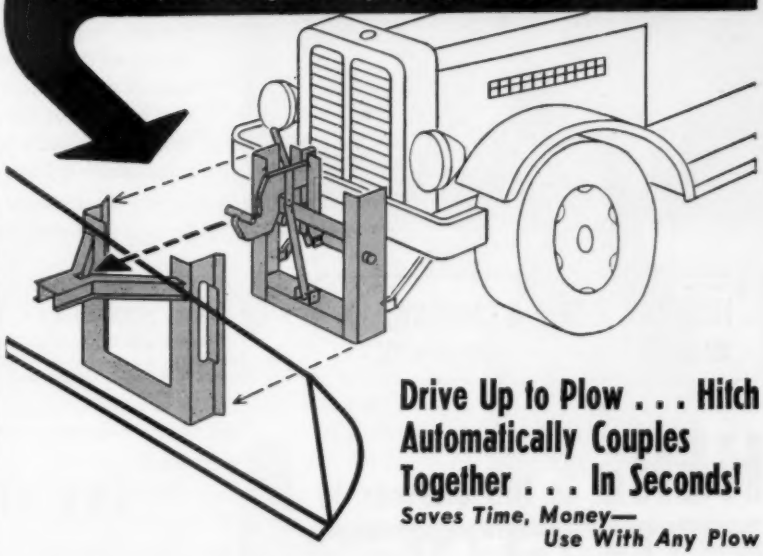
The Center contains administrative offices, pilot plant and testing areas, as well as separate laboratories for chemistry, rubber, concrete and plastics. Researchers will concentrate their efforts on concrete

(Continued on page 253)

NOW! Buy Any Make Snow Plow with Revolutionary Husting Hitch

DEMAND the Husting Hitch on
Your Favorite Make of Snow Plow

NEVER BEFORE!
A Quick-Snap Coupling for Snow Plows!



Drive Up to Plow . . . Hitch Automatically Couples Together . . . In Seconds!
Saves Time, Money—
Use With Any Plow

The Husting Hitch is Now Available on Every Make Snow Plow Listed

- BALKO
- FLINK
- GLEDHILL
- GOOD ROADS
- ROOT
- VALK
- WISCONSIN SPECIAL

The Husting Hitch

The revolutionary new HUSTING HITCH (patented) does what no other so-called fast coupling can do . . . offers true one man operation in just seconds without leaving the cab. Disengaging is just as easy.

The Spring Pin Action does the trick. The spring loaded pins snap into slots (see illustration) when the truck is driven up to the plow. Standard Hydraulic Controls then permit the driver to lift the plow and get under way without leaving the cab.

HUSTING HITCH equipped Snow Plows and Trucks are interchangeable. Once equipped, the truck can pick up any similarly equipped Plow, be it a Vee, Rigid One Way, Reversible or Trip Blade. ANY TRUCK CAN BE USED ON ANY PLOW.

The HUSTING HITCH has been offered for sale commercially and been in field use from New York to Minnesota since 1955. Each year sales have increased and our claims are based on the experience gained by well over 1,000 installations.

The Husting Flexible Link

A newly developed FLEXIBLE LINK (Pat. Pend.) gives HUSTING HITCH equipped plows additional freedom to follow the contour of difficult roadbed conditions found at some intersections and in alleys. It permits the snow plow to rotate about a central axis. Springs are used to hold the plow level in the carry position and prevent it from going out of control when in action next to a ditch.

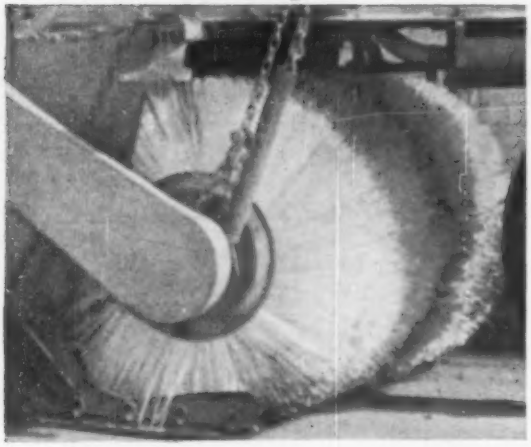
The patented HUSTING HITCH (Standard or in combination with the FLEXIBLE LINK) can do a job for you. It is rugged, dependable and foolproof. Be sure to ask for it on your favorite make of Snow Plow. For further information write for descriptive literature and learn about this really new development in Snow Plow Couplings.

KASTEN MANUFACTURING CORPORATION

MARKET 9-2311 — ALLENTON, WISCONSIN

CLEANER STREETS AT LESS COST

WITH *Wynene 18* POLYPROPYLENE BROOM FILLER



SPECIALLY ENGINEERED FOR ROTARY BROOMS

- TOUGH—RESISTS CONSTANT ABRASION
- GREATER FLEXIBILITY FOR LONG LIFE
- RESISTS MOST CHEMICALS, GREASES, ACIDS
- TOP EFFICIENCY IN ANY WEATHER

The rugged qualities of Wynene 18 broom filler make it possible for street-sweepers to perform with greater efficiency all the time. Its superiority is being proven day after day in actual service on city streets, under all conditions and in any weather. The wear-resistance and longer life of Wynene 18 mean fewer replacements and reduced maintenance cost—a boon to city budgets.

Standard specifications: .075 x 105 x 26" in natural. Other gauges and lengths to meet your requirements.

DISTRIBUTORS:

FREDERICK H. CONE & COMPANY, INC.
181 FRONT STREET • NEW YORK 38, N.Y.

MANUFACTURERS:

THE NATIONAL PLASTIC PRODUCTS COMPANY

Saran, Nylon and Polyolefin Fibers—Nevamar High-Pressure Laminates—Wynene Extruded and Molded Products

ODENTON, MD. • NEW YORK, N. Y. • MIAMI, FLA. • CHICAGO, ILL. • DALLAS-FORT WORTH, TEX.
DENVER, COLO. • PORTLAND, ORE. • LONG BEACH, CALIF. • SAN FRANCISCO, CALIF.

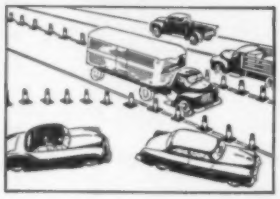
HERE is the answer to EMERGENCY BARRICADES

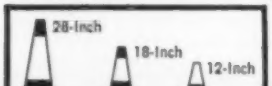
Lightweight, Easily-Adaptable

SAFE-T-CONE TRAFFIC GUIDES

SAFE-T-CONES are proven and accepted by Federal, State and Municipal traffic authorities in hundreds of major cities ...for traffic channeling, utility repairs, line painting and emergency blockades.

SAFE-T-CONES are easily adaptable to all situations at a moment's notice. Special construction allows them to be "stacked" in small space.





AVAILABLE IN 3 SIZES

Solid-Color PVC* POLY-CONES—18-inch and 28-inch sizes. Outlasts ordinary cones without upkeep!

*Poly-Vinyl Chloride

For full information write

RADIATOR SPECIALTY CO., CHARLOTTE, N. C.

See the WILCO TEPEE in action!

Meet us at Booth C-39,
Public Works Congress and Equipment Show
— Transportation to Installation —

wilco machine works, inc.

P. O. Box 3897AC-8 **Memphis, Tenn.**

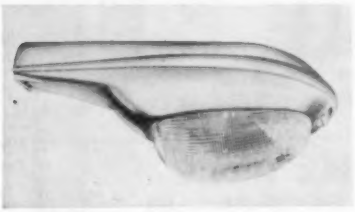
Purchasing

(Continued from page 251)

pipe, plastics and corrosion-resistant coatings and linings. The functional design of the building permits administrative and laboratory areas to be near pilot plant testing areas without sacrificing privacy. The Center has a staff of 60 scientists, engineers and technicians.

The concrete testing section contains a collection of over 400 samples of aggregates, taken from all over the United States and from such places as Peru, the West Indies, Puerto Rico, and South Africa. Experimental equipment includes a specially designed pit for casting pipe, a pipe-curing steam chamber capable of temperatures up to 160°F. to accelerate hardening, and a 25-ton-capacity overhead crane for moving large pipe.

New Luminaire for Arterial Streets



The new "Unitized Endoval" 2600 Series mercury luminaire is designed for wide, heavily-travelled streets. It uses 250- or 400-watt mercury lamps to provide high-level illumination and is offered with or without built-in constant-wattage or high-power-factor reactor ballasts. It also is available with a mounting for E. E. I.-NEMA standard plug-in locking-type photoelectric control.

Refractor is Corning Pyrex molded prismatic type with heat and moisture-resistant silicone rubber gasket to provide a completely sealed optical system. Adjustable socket positions and choice of lamp provides distribution pattern desired.

For additional information, request *Bulletin* No. 700-15 from Revere Electric Mfg. Co., 7420 Lehigh Ave., Chicago 48, Ill.

Asphalt Smoothing Iron

New, improved Surfa-Slick self-heating asphalt smoothing irons, either propane or gasoline-fired, have been announced by West Coast Steel Products of Riverside, Calif.

(Continued on page 255)

Specify

KENNEDY

Waterworks Valves ... and SAVE MONEY!

Your best assurance of saving money is Kennedy quality. Long the leader in waterworks valves design and construction, the Kennedy line is built for long, trouble-free service life. While A.W.W.A. specifications cover only non-rising-stem valves, the Kennedy line of A.W.W.A. standard gate valves also includes outside-screw-and-yoke valves and a wide variety of pipe end connections to meet your requirements.

Kennedy non-rising-stem A.W.W.A. gate valves have two "O"-Rings, the top for dirt seal and the bottom for pressure seal. Special feature of Kennedy "O" Ring construction is that the "O" Ring packing lies *above* the collar and therefore permits repacking under pressure. Find out all these Kennedy features and more by writing for Bulletin 611.

Fig. 571X

Fig. 561X

Fig. 566

NOW Available!

The new KENNEDY A.W.W.A. Maintenance Manual giving detailed information. For your copy, write today on your letterhead.

KENNEDY VALVE MFG. CO.
ELMIRA, NEW YORK
VALVES • PIPE FITTINGS • FIRE HYDRANTS
• OFFICES AND WAREHOUSES IN NEW YORK, CHICAGO, SEATTLE, SAN FRANCISCO, ATLANTA • SALES REPRESENTATIVES IN PRINCIPAL CITIES •

"Hardrock Smitty" says:— **IT TAKES A SMITH 125 AIR COMPRESSOR TO DELIVER ON THE TOUGH JOBS . . .**

Built to "take it" when the going get tough, the Smith 125 Air Compressor will give you years of low cost, dependable service. The Rugged Hercules Industrial engine delivers over 125 c.f.m. hour after hour, day in and day out.

LOOK AT THESE FEATURES:

- low initial cost
- low operating cost
- easy maintenance
- simple, compact design
- 12 volt electrical system
- 125 c.f.m. at 1165 rpm
- operates two 85 lb. paving breakers at same time

Compare price . . . compare job results—you'll "Go Smith" with "Hardrock Smitty"!

There's also a complete line of Smith Air Compressors in 45 cfm and 75 cfm models, both portable and stationary.

Ask your dealer for an "on the job" demonstration. (write us for complete information and the name of your nearest dealer.)

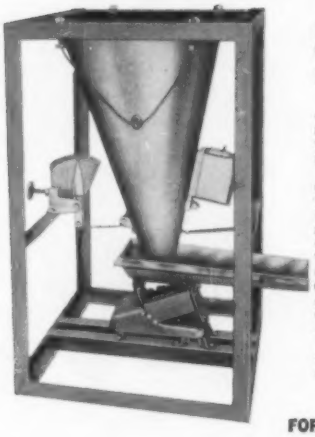
SMITH
AIR COMPRESSORS

GORDON SMITH & COMPANY, INC., Bowling Green, Ky.

Volumetric feeding of dry bulk materials

SYNTRON **VIBRA-FLOW**

DRY FEEDER MACHINES



provide constant volume flow in the treatment of water and sewage disposal.

—handle all types of dry materials ranging from the fine amorphous types to coarse lumps.

Syntron Dry Feeder Machines flow material by vibration. The flow rate is rheostat controlled, easily adjustable to deliver amount of material desired in the treatment of water, sewage disposal and industrial processing. The electromagnetic drive unit assures low cost operation, long service life, and low maintenance.

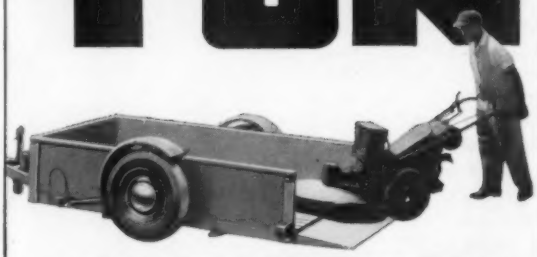
Available in open or cabinet models in sizes and capacities for every need.

WRITE TODAY FOR DETAILED INFORMATION.

61WF2

SYNTRON **SYNTRON COMPANY**
430 Lexington Avenue • Homer City, Pa.

ONE MAN LIFTS A TON



. . . OF GROUNDS CARE EQUIPMENT!

. . . *hauls, unloads, re-loads it, too* . . . with Trailevator, the amazing hydraulic elevating trailer that lowers to ground level for easy, one-man loading . . . *lifts its own load* in seconds! Parks, golf courses, colleges, cemeteries . . . if maintaining grounds is your responsibility, find out how you can get more jobs done in less time, *at less cost* . . . with Trailevator.

SEND TODAY FOR BULLETIN GC-100! *Trailevator Division, Magline Inc., P. O. Box 49, Pinconning, Michigan*

Trailevator
TAKES THE LIFT OUT OF LOADING

Visit Trailevator Booth C-36, Public Works Show, Minneapolis Municipal Auditorium, Sept. 24-27.

Purchasing

(Continued from page 253)

The tools feature a redesigned paving iron shoe, with two wind deflectors which are said to allow the units to be operated under all weather conditions.

Cutting edges of the shoe are

tapered to permit compaction right up to the surface of any wall or other obstruction. The Surfa-Slick irons heat in 10 minutes, maintain heat all day, and eliminate fire tending and transportation, according to the manufacturer. For additional information, write to West Coast Steel Products Co., 3120 Fifth St., Riverside, Calif.

Improved Tractor Shovel

Newest "Payloader" in the Hough line is the improved Series "B" version of the company's H-30 4-wheel drive tractor shovel.

The new H-30B is equipped with a 1¼-yard bucket, which adds 25% more capacity without disturbing the balance and stability for which the H-30 is noted, according to the manufacturer.

Boom arms of the H-30B are positioned ahead of and away from the operator. A walk-in operator compartment, new hand rails and safety ladder, adjustable bucket seat and new transmission controls are other incorporated features.

Four-wheel drive brakes give equal braking in both forward and

(Continued on page 257)

Remove more snow faster... and at less cost this winter, with a

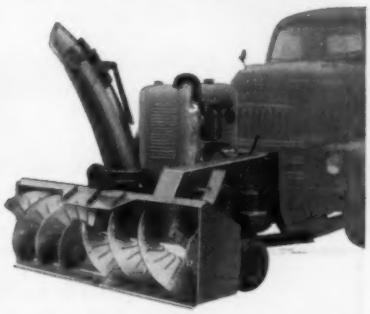
BROS Sno-Flyr

ROTARY SNOW PLOW

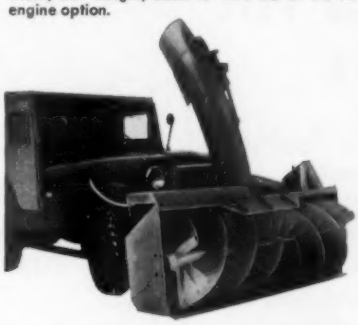
WIDE CHOICE OF MODELS

- to remove 4 to 20 tons of snow and slush per minute
- to cast snow up to 75′ (BL size) through adjustable chute or load directly into removal trucks
- to mount on your present equipment: front end loader and/or shovel, truck or jeep

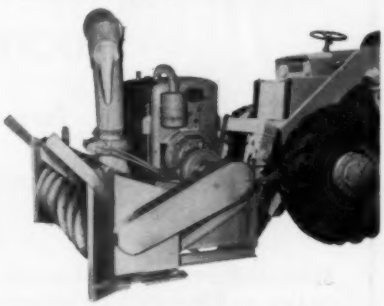
Model A-66L (loader mounted) complete with anti-friction, ball-bearing mounted, capping type, 220° rotating casting chute. Handles up to 7 tons of snow per minute in 6′6″ cutting width, 30″ height, casts to 40′. 36 or 56 HP engine option.



MODEL A-76 CW mounts with universal hitch on ½ to 5 ton trucks—also available to mount on front end loader and/or shovel. 360° rotating chute casts up to 40′. Cutting width (up to 15 tons of snow per minute) is 7′6″, height is 30″. 56 to 76 HP engine option.



Model A-66J for Jeeps has 6′6″ cutting width and 30″ cutting height to handle 4 to 7 tons of snow per minute. Split spiral, non-clogging auger-rotor. 36 HP engine. 180° rotating chute casts snow to 40′.



Model BL, loader and/or shovel mounted, is completely self-contained with power hydraulic full-circle rotating chute. 8′ cutting width, 40″ height, casts up to 20 tons of snow per minute as far as 75′ in any direction. 168 HP engine.

For full information contact

BROS

Road Machinery (Sno-Flyr) Division

BROS Incorporated

1057 Tenth Ave. S.E., Minneapolis 14, Minn. FEderal 1-5921

SEE BROS SNO-FLYRS

AT PUBLIC WORKS CONGRESS AND EQUIPMENT SHOW, MINNEAPOLIS, MINN. SEPT. 24-27

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Remove snow faster, easier with Monarch Power Hydraulic Controls!

The heart of the job is Monarch!

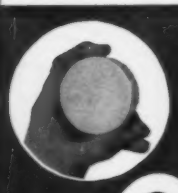
Now's the time to install a Monarch unit for fast snow removal this winter. Lift, lower your snow plow with a flick of the wrist right from the cab . . . with Monarch Controls! Instant up-and-down action.

Can be installed quickly. See your dealer or write for illustrated folder.

MONARCH

MONARCH ROAD MACHINERY COMPANY
1331 Michigan St., N.E. Grand Rapids 3, Michigan, U.S.A.

For all-'round deodorizing . . .



ROUNDS

Fragrant, laborless deodorant discs for urinals, bowls, garbage pails, lockers, closets

Deodoroma ROUNDS cost in use averages only a *fraction* of one cent a day. Rounds are formed under 70,000 pounds pressure: are dense and durable. Fragrance is locked in: lasts until the last particle has vaporized—there's no harsh "moth cake odor." Packed eight to the telescoping box—each Round sealed airtight—easy-to-shape Holzit wire holder in every box. For literature write to The C. B. Dolge Company, Westport, Conn.

For free sanitary survey of your premises ask your Dolge service man

Dependable DOLGE
WESTPORT, CONNECTICUT

A Complete Line of

HAYWARD ORANGE PEEL BUCKETS

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STANDARD ORANGE PEEL for sand, gravel, loam, etc.
HEAVY ORANGE PEEL for excavating, dredging and general contracting work.
MULTI-POWER ORANGE PEEL for hard, compact materials such as clay, gumbo, sand, etc.
THREE BLADE ORANGE PEEL with reinforced backs for rocks, stumps, piling, etc.

Plus Dwarf and Catch-Basin Buckets

Write for illustrated bulletin giving full details including weights and dimensions.

THE HAYWARD COMPANY
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Milwaukee, Wis., 2014 Sunset Court
Union, New Jersey, 2165 Morris Avenue
West Des Moines, Iowa, 712 28th Street

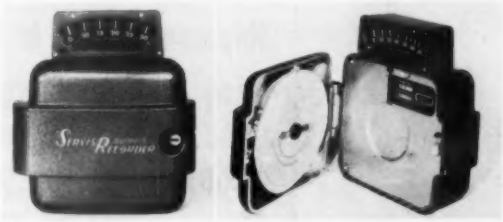
(Continued from page 255)

reverse and are sealed against dust and dirt. Hough reports that it's possible to service or reline brakes without removing the planetary hubs.

This new "Payloader" retains "Paylomatic" full power-shift transmission—a full-reversing, constant-mesh, countershaft-type with balanced, rotating hydraulic clutches. The H-30B is available with either gasoline or diesel power. For complete data and specifications, write THE FRANK G. HOUGH CO., 710 SEVENTH AVE., LIBERTYVILLE, ILL.

Busy and Idle Time Recorders

In addition to recording permanently actual mph or rpm by a stylus on a wax-coated circular 6-inch chart, these units also record time and mileage.



A Visible MPH Speed Recorder and a Visible RPM Speed Recorder, designed for use when speedometers or tachometers aren't desired, have joined the Service Recorder product complement.

MPH models record speed, time, and mileage on charts covering 24 to 72-hour periods; RPM models, for use on diesel trucks, show engine speed and time, engine idling. This RPM Recorder can also be used on off-highway equipment.

(Continued on page 259)

Build extra good will on fire calls!

MINIMIZE SMOKE AND WATER DAMAGE with FULTON SHUREDRY GREEN-BAK SALVAGE COVERS!

You'll create a better public image of your fire department when you use Fulton Salvage Covers. Because these quality covers give property maximum protection from smoke and water damage, they signify an extra measure of care on the part of your firemen. This results in greater good will, support for your department and in valuable community relations.

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Fulton Salvage Covers meet the specifications of the National Board of Fire Underwriters, and are approved by Associated Factory Mutual Fire Insurance Companies.

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Fulton COTTON MILLS

FULTON MANUFACTURES A COMPLETE LINE OF NYLON SALVAGE COVERS

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BOOTH B65

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Name's Neenah . . . if we make it it's a casting . . . and the best.

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Your Answer:
The GOOD ROADS

"JET" SPREADER

Fast, efficient ice control. Many styles and sizes. Cab-operated. Dump body or chassis mounted. Send for full information.

Manufacturers of Snow Plows, Road Spreaders, Leaf & Litter Equipment

Good Roads GOOD ROADS MACHINERY CORPORATION
MINERVA, OHIO

FILTER SAND AND GRAVEL

Produced from an inland pit hence free from river contamination and foreign matter.

Shipment in bulk or bagged.

Many of the larger filter plants throughout the United States are equipped with our products.

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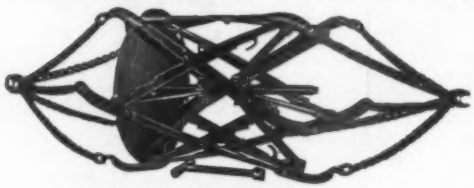
Muscatine, Iowa
P.O. Box 307 Amherst 3-2711

EXPANDING ROOT CUTTER SEWER CLEANER



Fits in on Every Sewer Cleaning Job
Adjusted in 30 seconds to fit sewer from 8 to 30 inches.

Will clean the entire sewer wall, top, and sides as well as the bottom, cutting and removing the roots and caked sediment, putting the sewer system in almost 100% clean condition.

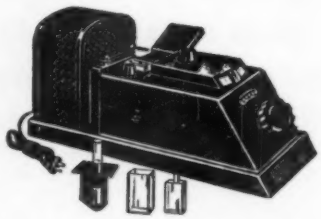
Open and in action removing roots and cake sediment like this.

Write for our new catalog on complete sewer cleaning equipment.

EXPANDING SEWER MACHINE COMPANY
108 East Walnut St. **Nappanee, Ind.**

KLETT SUMMERSON
ELECTRIC PHOTOMETER

Adaptable for Use in Water Analysis



Can be used for any determination in which color or turbidity can be developed in proportion to substance to be determined.

KLETT MANUFACTURING CO.
179 East 87th Street, New York, N. Y.

(Continued from page 257)

Drivers can glance at the indicator and see exact mph or rpm speeds. Illuminated dials are marked in increments of 5 mph from 0 to 70, or every 100 rpm on the RPM models. MPH models have a red warning light, factory pre-set for 50mph. It can be set to any speed desired. RPM models have an amber light to indicate overdriving and a red light to indicate lugging. RPM range settings are adjustable.

For additional information on these relatively maintenance-free and tamper-proof recorders, write THE SERVICE RECORDER CO., 1013 ROCKWELL AVE., CLEVELAND 14, OHIO.

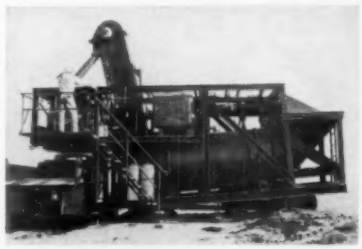
Hot-Mix Asphalt Plant Portable Batch-Type

The Cutler Black-Topper No. 25 is said to be the only maintenance specification hot-mix asphalt plant designed to serve the needs of city street departments, driveway and parking lot pavers, highway maintenance departments, and others who require quality hot mix.

Some "Big Plant" features of the Cutler No. 25 include:

- **an oversized dryer 5 feet in diameter, 10 feet long, inclined at a 4° angle, and equipped with a 65-gph Hauck air atomizing oil burner;**
- **polycone dust co lector with 8-9 inch heavy-duty cyclones and equipped with a heavy-duty exhaust fan moving 5500 cubic feet of air per minute;**
- **jacketed Buffalo asphalt meter coupled to a Viking heated asphalt pump to inject asphalt into the pug**

(Continued on page 260)



TWO PIECE

5¼" two-piece sliding or screw type cast iron valve boxes, covering 4" through 10" valves.

ADJUSTABLE VALVE BOXES

THREE PIECE

5¼" three-piece valve boxes supplied with bases for 4" through 24" valves. Interchangeable parts.

Manufactured to the highest standards for sure service.

A complete line of service and roadway boxes, manhole rings and covers. (Covers marked gas or water)

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OPELIKA, ALABAMA

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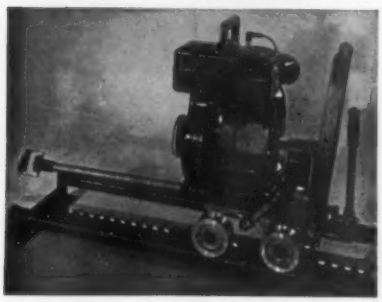
EBMI Underground Boring Machine
New! Improved!



Model 70

- **BORES**—with no surface break
- **BORES**—up to 250 feet in length
- **BORES**—up to six inches diameter
- **BORES**—so drill stem of pipe of conduit stays
- **BORES**—1,000 feet on 1 Gal. of gas
- **REAMS**—up to 12 inches diameter

Write immediately for information.

EARTHWORM BORING MACHINE, INC.
P. O. Box 1100
Santa Monica, California

How to Keep Track of Every Key

TELKEE KEY CONTROL

$73.90 Complete
(75 capacity)

TELKEE simplicity tags and numbers keys, in order. Visible index identifies keys by lock location, number, description.

TELKEE convenience shows all keys at a glance. Locates loaned or assigned keys instantly. Saves time, saves money.

TELKEE security provides complete continuous record of all keys issued. Key identities known only to authorized personnel.

Available in 10 models, 33 capacities from 21 to 2240. Compact cabinet of fine furniture steel, tens of thousands in use in offices, industrial plants, hotels, stores, schools, hospitals, and public buildings, large and small, in U.S.A., Canada, and overseas.

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No matter what your storage problem, a prestressed concrete tank offers many immediate and long term advantages. Minimum maintenance, longest service life, lowest overall cost, 75% of construction cost is spent locally. Modern in engineering and design, proven in service, lowest in cost...prestressed concrete should be considered in any tank planning.

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Rosco flushers are designed for the utmost in efficiency. A modern, high compression, short-stroke power plant furnishes high pressure water streams to flush any paved surface really clean. Heavier gauge steel tank for longer life . . . mounted integrally to the frame. High quality and ease of service make Rosco flushers the choice of modern maintenance departments in cities all over the U.S. Remember . . .

Rosco engineered to out-work your toughest jobs

ROSCO MINNEAPOLIS

ROSCO MANUFACTURING CO.
3118 Snelling Avenue • Minneapolis 6, Minnesota

Purchasing

(Continued from page 259)

mill under pressure;

- **dual cold aggregate storage bins with accurate reciprocating feeders;**
- **heavy-duty twin-shaft pug mill that dumps directly into the dump truck—no conveyors, no pits;**
- **folding hot elevator using wear-resistant buckets mounted on precision conveyor belt;**
- **heavy-duty industrial drive consisting of a Continental 6-cylinder No. 226 industrial gasoline liquid cooled engine driving a heavy-duty lineshaft;**
- **built-in fines feeder with adjustable ports to accurately add fines to the hot mix.**

The No. 25 Black-Topper can be erected or dismantled in less than an hour's time. It travels as a legal semi-trailer load and is equipped with air brakes and fifth wheel.

Additional information can be obtained by writing to CUTLER ENGINEERING CO., a division of ASPHALT ENGINEERING CO., 5435 W. 63RD ST., CHICAGO 38, ILL.

Hydraulic Combination Front-Rear Spreader

This all-purpose, year-round unit spreads material either before or behind the carrier's rear wheels *without* reversing the hopper. It requires no adaptions or attachments for seal coating in summer or spreading for snow and ice control in winter.

Dual 14-inch spinners located in front of the rear wheels are combined with a single 18-inch spinner at the rear. A selector valve in the cab which works in combination with the fully reversible fluid drive conveyor hydraulically actuates the spinner.

Front and rear spinner operate independently. Changeover from front to rear spreading, heretofore impossible without reversing the entire hopper on the truck bed, can now be a accomplished on the go, without necessitating truck slow down.

Position of the deflector is con-

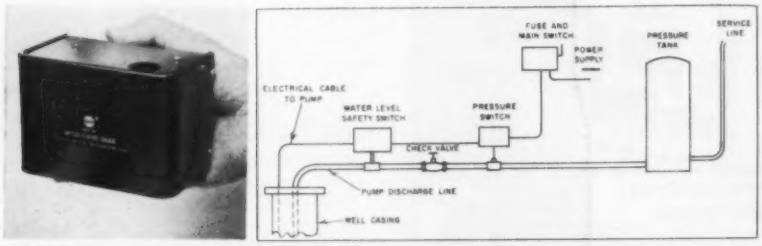
trolled from the cab. This feature plus the speed of the conveyor makes possible any spread pattern or quantity desired, according to the manufacturer. For windrowing of salt, sand or chemicals, the rear spinner can be quickly removed by withdrawing a single bolt. This permits full chute discharge from the flight conveyor. For details on the Shunk-Torwel combination front and rear spreader can be obtained from SHUNK MANUFACTURING COMPANY, INC., BUCYRUS, OHIO.

Water Level Safety Switch

A new device prevents pump damage due to insufficient liquid at the source, or when pump loses its prime. It is designed for installations where bearings, packing glands and motor windings depend on pumped water for lubrication and cooling. Insufficient water flow could damage these parts.

The new water level safety switch senses liquid flow by measurement

(Continued on page 262)



USG water safety switch mounts on pump discharge line to prevent damage to equipment by shutting down system, when water level drops too low. In this installation, the switch is mounted on the discharge line of a submersible pump.

Where's your small engine **PROBLEM?**

WEIGHT? SAFETY?
SIZE? ECONOMY?

use **YANMAR**
DIESEL POWER

AIR COOLED MODELS—
2 TO 4½ BHP
WATER COOLED MODELS—
2 TO 8 BHP

Easy starting—
Smooth running.
Big engine features
in a compact package!

—a precision product of the new Japan made to U.S. specifications by the world's largest manufacturer of small diesel engines.

Immediate delivery from large U.S. stocks of engines, accessories and parts.

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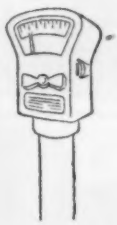
19402 So. Susana Rd., Compton, Calif. Mailing Address: P. O. B. 5309, Long Beach 5, Calif.

COIN CHANGERS INCREASE PARKING METER REVENUE, AND PLEASE THE VOTERS!



Convenient coin changers, located near metered parking facilities . . . lot or street . . . can help solve some of your parking problems.

- **24-hour unattended convenience**
- **eliminate need for attendants**
- **speed use of meters and increase revenue**
- **please the voters**

Standard Change-Makers has a complete line of change-makers to change any 1, 2 or 3 coins (50¢, 25¢, 10¢ or 5¢) into any possible combination of change. Ruggedly built for years of outdoor use. Write for full information today.

STANDARD CHANGE-MAKERS, INC.
422 E. New York St.
Indianapolis 2, Indiana

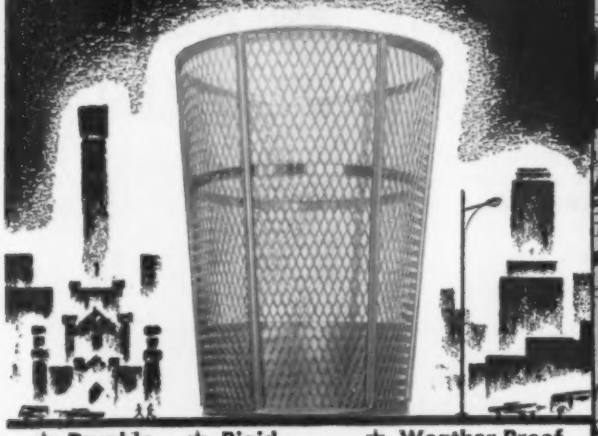
products of
STANDARD CHANGE-MAKERS

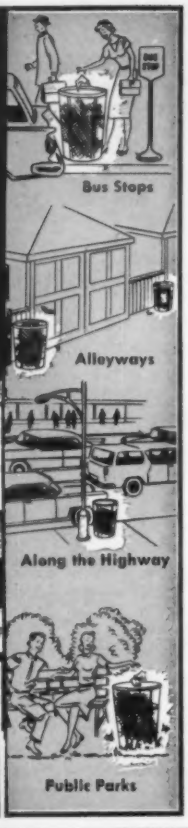
Also ask about the Standard Change Counter and Sorter Portable-Electric. Only $199.

DEMCOR E-X-P-A-N-D-E-D METAL

LITTER BASKETS

Help keep your city CLEAN





★ Durable ★ Rigid ★ Weather Proof
★ Low-cost ★ Galvanized ★ Built to last

Write for complete description and prices

DESIGNERS METAL DIVISION
of Southern Electric, Inc.
8701 S. Greenwood Ave. • Chicago 19, Ill.

Off-Street Parking
PAYS OFF!

Western Parking Gate
in combination with hourly rated
Western Ticket Issuing Machine

Over 1700 Western Parking Gates in more than 225 cities have proved that off-street parking can be handled automatically at a substantial profit. Positive control—Western Parking Gates are electrically operated to give complete flexibility, dependability and ease of operation in any city parking facility.

Key, PARKARD, coin and token-operated gates, separately or in combination, provide the answer to municipal lots operated on a flat fee arrangement.

Western Ticket Issuing Machine available for operations involving hourly rate and validation parking. Low labor costs, low initial equipment cost and simple installation make them a wise investment for any city.

EXCLUSIVE FEATURES—Western, builder of more than 15,500 railroad and highway crossing gates, has engineered the "Lot Full" sign, electric opening and closing treadles, double key controls for night and day parking, electro-cards with period changes, push-button remote controls and automatic counters.

See our eight-page section in Municipal Index 1961

Write for FREE copy of our 40-page manual "How to Lay Out a Parking Lot."

8378

WESTERN INDUSTRIES INC.
Electric Parking Equipment Division
2730 West 36th Place, Chicago 32, Illinois
CANADA: Cameron, Grant Inc., 465 St. John Street, Montreal 1, Quebec

Purchasing

(Continued from page 261)

of discharge pressure and automatically shuts system down when water level gets too low. It mounts on the pump discharge line and is connected, in series, with the pump motor power supply. If, after a predetermined time, pump discharge is not at a specified pressure level, a microswitch electrically disconnects the pump motor, stopping the system. At frequent intervals automatic cycling of the pump will be initiated until the required conditions are satisfied by the flow capacity of the system.

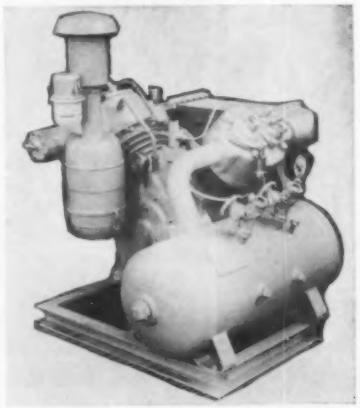
Additional information about this new water level safety switch is available from UNITED STATES GUAGE DIVISION, AMERICAN MACHINE & METALS, INC., SELLERSVILLE, PA.

Vehicle-Mounted Compressor

A new 21-hp vehicle-mounted air compressor, which delivers 78 cubic feet of air per minute, is now being marketed by ATLAS COPCO, INC., 545 FIFTH AVE., NEW YORK 17, N. Y.

It is a two-cylinder, two-stage, single-acting, air-cooled, V-type machine with intercooling between stages and is designated as Model IT8. The compressor is intended for rear mounting to the Willys Jeep CJ-5 and CJ-6, as well as for center mounting to the FC-150 and FC-170, and is designed to draw its power supply from the vehicle engine.

Net weight of the unit is 600 pounds, compressor speed 1450 rpm, working pressure 100 psi. The IT8 comes equipped with a steel frame for bolting to the vehicle. Accessories include drive pulley for mounting to vehicle power take off. For additional information, write directly to the company.



Paper-Bag Refuse Container System

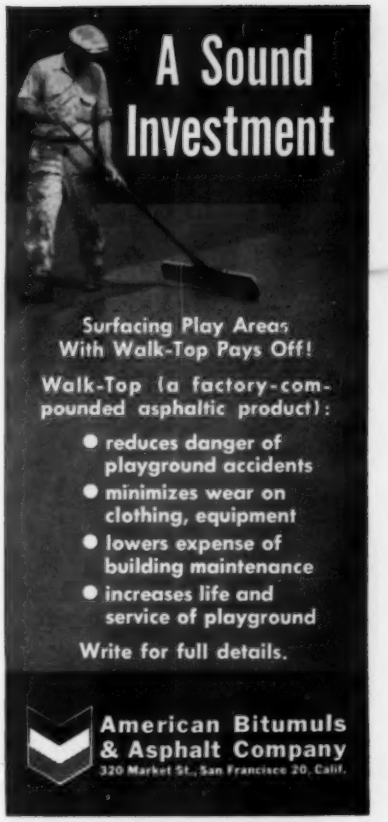
A new method of garbage collection is now undergoing its first U. S. test in the Town of Montclair, N. J. It is based on the use of strong, waterproof, sanitary disposable paper bags, which are fitted to a permanent metal holder equipped with a hinged lid, and has been developed by West Virginia Pulp and Paper Co.'s Multiwall Bag Division.

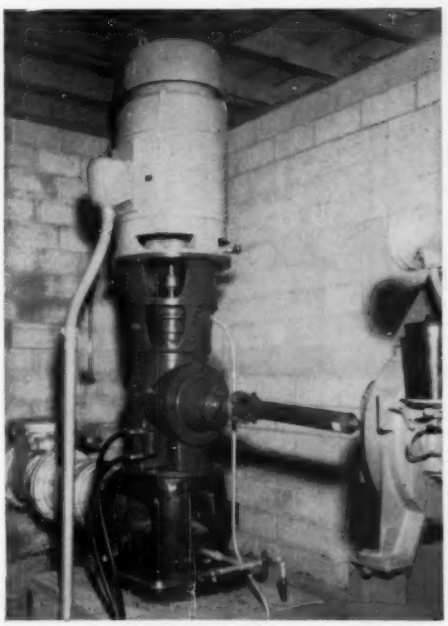
Each bag's capacity equals that of two ordinary garbage cans. Bags will handle broken glass, sticks, cans, wet garbage and similar refuse, and will stand up in all kinds of weather.

The heavy-gauge steel bag holder can be wall-mounted. It is equipped with a rubber ring around its rim which keeps in odors and seals out flies. Installation of the bag into the holder and its removal is easily accomplished.

On collection days bags are taken directly from the holder by the garbage collector for disposal into col-

(Continued on page 264)


A Sound Investment
Surfacing Play Areas With Walk-Top Pays Off!
Walk-Top (a factory-compounded asphaltic product):
● reduces danger of playground accidents
● minimizes wear on clothing, equipment
● lowers expense of building maintenance
● increases life and service of playground
Write for full details.
American Bitumuls & Asphalt Company
320 Market St., San Francisco 20, Calif.



NEW! Automatic combination gear drive

JOHNSON

Redi-Torq®

Redi-Torq combination right angle gear drive with automatic clutch, eliminates manual switch-over to engine drive in case of power failure. Drive couples to engine by flexible shafting or couplings—engine clutch unnecessary. Engine may be tested without interfering with electric motor operation of pump.

For round-the-clock protection against power failure in water, sewage and fire installations. Developed and proven in municipal and industrial use over several years.

Sizes: 15 to 200 hp; hollow or solid shafts. Write for engineering catalogs.

JOHNSON MAKERS OF FINE GEARS SINCE 1904

GEAR & MANUFACTURING CO., LTD.

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East and Gulf Coast representatives:
Smith Meeker Engineering Co., 157 Chambers St., New York City

13-R

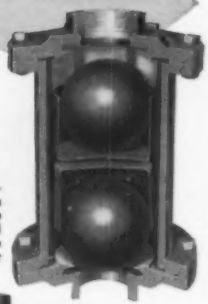
Crispin UNIVERSAL AIR VALVES

. . . positive, full-time air control when line is filled, in operation or emptied.

Crispin

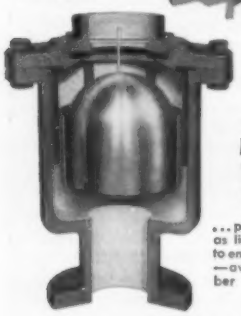
AIR CONTROL Valves

- peak efficiency
- maximum dependability
- minimum maintenance
- simplified construction
- easy accessibility



Crispin NEGATIVE PRESSURE AIR VALVES

. . . release air semi-automatically from pipeline siphons to end danger of throttled pipeline — available with either metal or rubber float.



Crispin AIR AND VACUUM VALVES

. . . permit air to escape as line fills, allow air to enter as line empties —available with rubber or metal float.

Write, wire or phone for complete information and your free copy of the Crispin Air Control Valve catalog.

AIR CONTROL VALVES FOR OVER 30 YEARS

multiplex

MANUFACTURING COMPANY

BERWICK, PENNSYLVANIA

Dept. E

Purchasing News

(Continued from page 263)

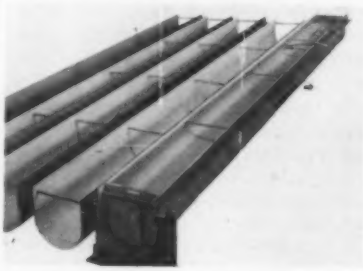
lection truck. There is no spillage, no noise.

The Westvaco Refuse System is patterned after similar systems successfully employed in many communities in Sweden and England. According to the paper company, the marked increase in speed of collection and disposal, as well as reduction in labor costs, is expected to offset the cost of the bags and holder.

For additional information on the Westvaco Refuse System, write WEST VIRGINIA PULP AND PAPER BAG COMPANY, MULTIWALL BAG DIVISION, 230 PARK AVE., NEW YORK 17, N. Y.

Fiberglass-Reinforced Wash Water Troughs

Forty-eight wash water troughs of tough, highly rigid Fiberglas-reinforced plastic will be featured in the new municipal water treatment plant at Rapid City, S. D. Each trough is 18½ feet long, 16 inches deep and 15 inches wide. Each has been fabricated for the plant by Valco Corporation, St. Paul 4, Minn., to the specifications drawn by engineers of Infilco, Inc., Tucson, Ariz.



Trough walls are .175 inch thick and are reinforced along the top edge with steel. Rigidity of the fiberglass walls tests out to a tolerance of plus or minus .100 inch, when the troughs are full of water. The fiberglass was impregnated with a polyester resin, using the hand lay-up process.

According to William J. Houlihan, president of Valco, Fiberglas construction was specified for the troughs because of its extreme re-

THE ALL NEW Buffalo Turbine FST-1

BRINGING YOU THESE FINE FEATURES:

- 100 Gallon Stainless Steel Tank.
- High Pressure Piston Type Pump.
- Full 360° Turntable Rotation of Unit.
- Handles Dust and Granulas.

SPRAYER TURBULENT AIR DUSTER BUFFALO TURBINE

BUFFALO TURBINE

Agricultural Equipment Co., Inc.

69 Industrial Street

Gowanda, New York

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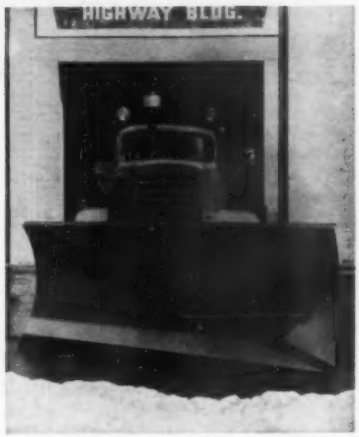
sistance to chemical corrosion, its low maintenance requirement, its rigidity and strength.

The aqua- colored troughs will be used for removing sediment from water by the natural-flow process, during the intial phase of water purification. For additional information, write to VALCO CORP., ST. PAUL 4, MINN.

Reversible Trip-Blade Plows



In designing this new snow plow series, Wausau Iron Works relocated the 'A" frame assembly on top of the reversing frame to permit ample road clearance and to provide additional leverage for straight ahead push.

For added strengh and durability, the new plows have six vertical reinforcing ribs, a formed box section main horizontal brace, a double flange horizontal brace which is an integral part of the moldboard, and a formed box section bottom horizontal brace that is press brake dimpled to withstand extremely heavy wear and rough treatment.

Each reversible trip-blade plow can be set at five different plowing positions: 35° and 42°, right or left, plus center. Adjustable six-position push plates permit the plow to conform to various truck frame heights. For details, write to WAUSAU IRON WORKS, WAUSAU, WIS.

Announces New Power Sweeper

Starsweep Model 1054 is the latest addition to the Wayne Manufacturing Co. power sweeper line. Features include a 54-inch main broom

(Continued on page 266)

Four Fine Facilities in PITTSBURGH

ALLEGHENY MOTOR INN Opposite Greater Pittsburgh Airport. 60 air-conditioned rooms, tile bath, TV, radio, phone. Superb restaurant and cocktail lounge. Year-round swimming pool. Courtesy car to and from airport. **AMherst 4-7700**

HOTEL PITTSBURGHER In the heart of the Golden Triangle. 400 outside rooms, bath, TV, radio, air-conditioning. General Forbes Lounge & Dining Room. **ATlantic 1-0870**

JACKTOWN MOTOR HOTEL 1 mile west of Irwin Interchange on Route 30. 60 air-conditioned rooms, TV, telephone, combination tile bath. Facilities for dining and group parties. **UNderhill 3-2100**

HOTEL PITTSBURGHER MOTEL Opposite Greater Pittsburgh Airport. 56 air-conditioned rooms, tile bath, radio, TV, phone. Courtesy car to and from airport. **AMherst 4-5152**

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In over four years of successful operation there has never been an Emergency Vehicle Accident at any one of the 300 protected locations under "EL-TEC" control. An "EL-TEC" installation affords you the advantage of:

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For safe and effective emergency traffic control write today for information regarding an actual demonstration in your city.

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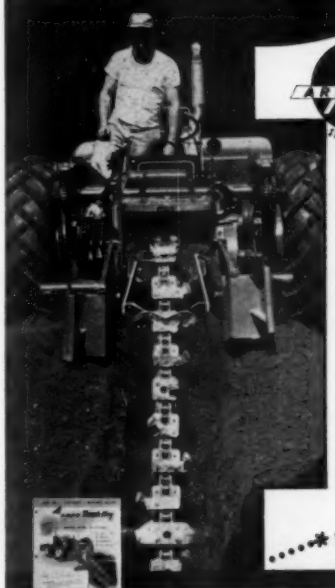
97-AC Northfield Road • West Orange, N. J.

AMERICA'S #1 TRENCHER



Trench-Hog

- PRICED WELL BELOW independent drive machines . . . below competitive units when quality features are compared.
- TRENCHES up to 800' per hour - 6" to 20" wide - 3½' to 7' deep.
- PRECISION - obtained by power pump boom control valve.
- CHOICE OF CUTTERS - slicer, chisel or Super-Service cutters for prevailing soil conditions.
- INDEPENDENT wheel control of accurate straight line or curved trenching.

WANT PROOF OF TRENCH-HOG SUPERIORITY?

WRITE NOW for this complete brochure on the features and merits of the Trench-Hog. Please state your model tractor!

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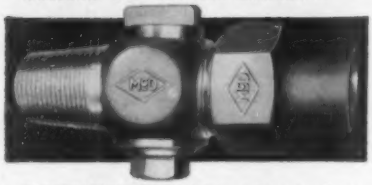
TRENCHERS • HALF-TRACKS • DOZERS • UTILITY BLADES

EST. 1856
McDonald

McDONALD BRASS GOODS ARE EXPERTLY MACHINED . . . AND ALL WATER SERVICE FITTINGS ARE INDIVIDUALLY TESTED - ASSURING THE FINEST QUALITY.



CORPORATION STOPS. With straight coupling nut. INLET: AWWA thread. OUTLET: Standard AWWA thread for copper service pipe. Sizes ½" thru 2".

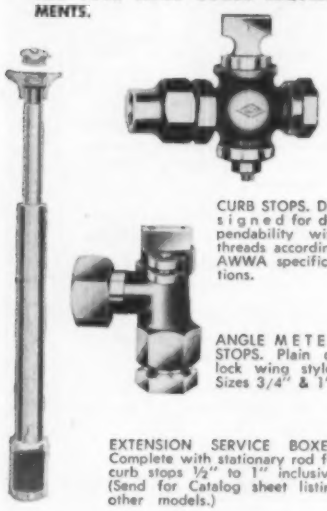
NEXT TIME YOU BUY BRASS GOODS

Specify McDONALD

You can rely on good workmanship and good quality brass when you specify McDonald.

Here's the reason why: McDonald's have a 105-year old reputation for reliability. McDonald Brass Goods are made only of the best available materials.

McDonald's pride themselves on their high standards for constant quality control. Only the best in brass goods ever leaves the McDonald plant to fill your order. — CONTACT McDONALD FOR YOUR BRASS GOODS REQUIREMENTS.



CURB STOPS. Designed for dependability with threads according AWWA specifications.

ANGLE METER STOPS. Plain or lock wing style. Sizes 3/4" & 1".

EXTENSION SERVICE BOXES. Complete with stationary rod for curb stops ½" to 1" inclusive. (Send for Catalog sheet listing other models.)

Write for complete details and specifications.

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Dept. AC61 12th & Pine St.
Dubuque, Iowa

BRASS GOODS ● PUMPS
OIL EQUIPMENT ● DRAINS

Purchasing

(Continued from page 265)

sweeping swath (64 inches with standard right hand side broom, 76 inches with dual side brooms); ability to sweep up to 300,000 square feet per hour; 16-cubic-foot effective hopper capacity. The machine dumps hydraulically in clean, neat piles in less than eight seconds. Single foot control for forward and reverse travel is standard, as it is a fully-enclosed Filter-Vac dust control system with 78 square feet of filter area.

Starsweep 1054 is well suited for both indoor and outdoor applications, for use at shopping centers, parking lots, schools, etc. For further information, write WAYNE MANUFACTURING CO., 1201 E. LEXINGTON ST., POMONA, CALIF.

Purchasing News Briefs

• negotions have been completed, and **B-I-F Industries** is now a division of The New York Air Brake Co. B-I-F continues in Providence, R. I., under the same management and with no change in aims or objectives.

• pending approval of the Argentine government, Rambler automobiles will be manufactured in Argentina starting early next year in a joint venture with **Willys Motors, Inc.**, its Argentine affiliate, Industrias Kaiser Argentina, S. A., and **American Motors Corp.**

• **Sparton Control Systems, Sparton Corporation,** Jackson, Miss., has appointed the firm of Vene D. Fry Co. as representative for the midwestern four-state area. Vene D. Fry Co. also represents Layne-Bowler Pump Co. Dale N. Woodford, chief engineer of Sparton Control, reports that Sparton has developed several new products for remote control operations in municipal water works, utilities and oil pipeline industries.

NCG® wherever emergency strikes...

*Handy** Resuscitators automatically breathe when the breath of life is gone.

The Handy Resuscitator does *three* important things:

1. It automatically inhales and exhales, adjusting automatically the depth of respiration to the patient's lung capacity, for an adult, child or even *infant.*
2. It can be quickly switched to "Inhalation" to supply oxygen to be absorbed by the spontaneous respiration of the patient.
3. It provides sufficient suction as an Aspirator to remove obstructing material from the throat, such as water, mucus, etc.

"BE PREPARED" for drownings, carbon monoxide poisonings, heart attacks, electric shock, strangulation, asthma, asphyxia of the new-born.

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ABOUT PEOPLE

Appointment of T. L. Kinch to the post of advertising director of **Hamilton Kent Manufacturing Company,** Kent, Ohio, has been announced by A. J. Reto, sales manager. Mr. Kinch comes to Hamilton Kent from Ralph Gross Advertising, Inc., Akron, Ohio, industrial agency, where for ten years he specialized in advertising to the sewerage, drainage and waterworks fields as account executive to **Hamilton Kent** Mfg. Co., and the United States Concrete Pipe Company, Cleveland, Ohio.

T. L. Kinch

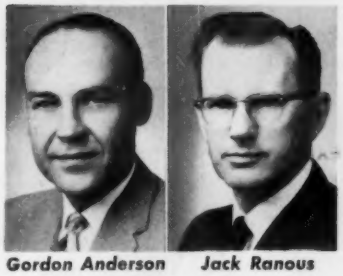
Henningson, Durham & Richardson has opened an office in Charlotte, N. C., and has named Robert Sathworth as manager of the operation, according to an announcement by C. W. Durham, president of the Omaha-based engineering and architectural firm. Henningson, Durham & Richardson has purchased all the stock and taken over the practice of Vannort Engineers, Inc. of Charlotte. They also have offices in Phoenix, Dallas and Colorado Springs.

J. M. Hollingsworth, manager of **Lone Star Steel Company's** cast iron pressure pipe sales, has been promoted to manager of the Dallas-based company's new spiral weld pipe sales department, according to Walter T. Moreland, vice president-sales.

Wayne L. Dowdey, vice president-sales for **The Eimco Corp.** is now headquartered at the head office of the corporation in Salt Lake City, Utah. Berne A. Schepman, vice president of the Process Engineers division of Eimco has moved from the divisional headquarters at San Mateo, Calif., to the Salt Lake City offices.

William R. McGarry has been elected president of the **United States Concrete Pipe Co.,** Cleveland 14, Ohio. He was formerly vice president and general manager of this Pittsburgh Coke & Chemical Company subsidiary, which manufactures concrete pipe and vitrified clay pipe. Mr. McGarry succeeds the late Robert M. Moore.

William McGarry



Gordon Anderson *Jack Ranous*

The board of directors of **Mitts & Merrill, Inc.,** Saginaw, Mich., have announced the appointments of Gordon V. Anderson and Jack Ranous as general manager and sales manager, respectively.

Fulton Cotton Mills, Atlanta, Ga., has named Mike Kart sales and promotion manager of its canvas department, manufacturer of tents, tarpaulins, fitted truck covers, salvage covers and canvas specialty items.

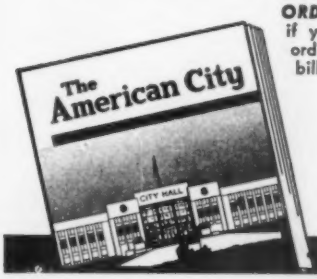
W. Arthur Welch has joined **Carus Chemical Co.,** LaSalle, Ill., as technical consultant, according to an announcement by S. Bruce Humphrey, director of marketing. Known in the water purification and chemical processing indus-

(Continued on page 270)

Make Sense Out of Your Water Rates

This is the book that will tell you how to determine—

- **Proper water rate earnings**
- **Fair out-of-city charges**
- **Logical fire-protection charges**
- **Air conditioning, construction, service tap and other charges**

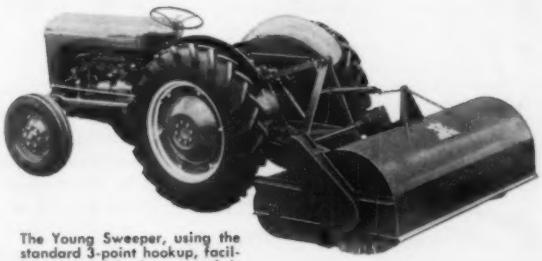


ORDER TODAY **at $2.75 per copy if your payment comes with your order. Otherwise $3.00 if you wish bill.**

The American City
470 PARK AVE. SOUTH
NEW YORK 16, N. Y.

a *Buttenheim* publication

Sweep the surface CLEAN *with a*
YOUNG SWEEPER



The Young Sweeper, using the standard 3-point hookup, facilitates a quick change and is ideal for city streets, parking lots and parks.

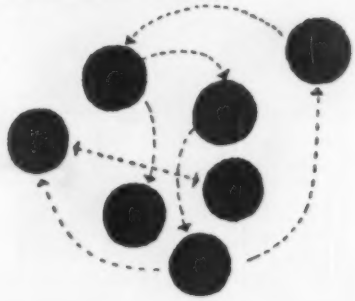
This new tractor mounted sweeper is designed for use with the lightest model utility tractor. Its 30" diameter 6 foot wide broom sweeps a clean 6 foot path right up to the curb. And, with its 3-point hookup it is easily maneuvered into any corner. With a broom operating speed of 120 r.p.m. it can easily sweep ahead of a machine such as the Young Slurry Machine during the actual paving process. The operator can lower the broom into sweeping position, raise it when the pan is full and dump the load where desired without ever leaving the tractor seat. Because it is fully shrouded it prevents damage from flying debris to any cars or buildings adjacent to the work area.

YOUNG

WRITE TODAY FOR COMPLETE INFORMATION

THE YOUNG COMPANY
200 MILL STREET • WACO, TEXAS • Plaza 4-2324

DOWN TO FUNDAMENTALS



NO WASTED MOTION

KERN instruments are designed for today's competitive needs. With every element completely functional, they afford maximum simplicity of operation...help you do the job faster and better. The location of all controls is efficiency-engineered for operational economy. All operations are from behind the instruments.

PROMPT, RELIABLE SERVICE
FACTORY TRAINED TECHNICIANS

KERN INSTRUMENTS, INC.
FUNDAMENTAL SURVEYING EQUIPMENT
120 Grand St., White Plains, N.Y.

GK 1 Small Engineer's Level
for general engineering and construction work
- *22.5x telescope, AR coated, internal focusing, min. 3 ft.*
- *Weight of instrument 2.0 lbs., carrying case 1.3 lbs. Complete with tripod 13.0 lbs.*
- *Horizontal circle optional.*
- *Fine tilt screw; coincidence spirit level.*
- *Probable error in 1 mi. ± 0.013 ft.*

For Details Write for Brochure K606

About People

(Continued from page 267)

tries for many years, Mr. Welch has contributed extensively to the technology of taste and odor control, a phase of water purification in which he has been active for the past 25 years.

Glenn O. Wilson has been named to the newly created post of manager of the sales technical division of the international division of **Dorr-Oliver Incorporated,** Stamford, Conn., as part of a program aimed at further improving D-O service to customers in South America, Africa, and Asia.

Glenn Wilson

Grover M. Herman, founder and chairman of the board of **American-Marietta Co.**, Chicago, Ill., received an honorary doctor of laws degree at the 110th commencement of Manhattan College in New York City.

Chain Belt Company, Milwaukee, Wis., has named Charles E. Smith, Jr. and Wayne J. Leddy as process equipment regional sales managers. Responsibilities of both men will be centered in the sales of Rex sewage, water and industrial waste treatment equipment. Mr. Smith will be headquartered in the company's Philadelphia, Pa. office; Mr. Leddy will be based in the firm's New York office.

Sydney M. Harris has joined **The Eimco Corporation's** Process Engineers Division as a sales engineer. Wayne L. Dowdey, vice president and general sales manager, stated that Mr. Harris will work out of the company's New York office.

Carl E. Anderson has been elected president and chief executive officer of **E. W. Bliss Company,** parent company of the Gamewell Co., according to an announcement by William L. Less, chairman of the executive committee. The Gamewell Co., makers of traffic signals and other public safety equipment,, maintains its Gamewell division at New-

Carl Anderson

(Continued on page 270)

GOLDAK TRANSISTORIZED LOCATORS

Pipe Locator-Leak Detector

"Dualtronic"

Model LC-5T

The new "Dualtronic" combines the finest transistorized Pipe Locator ever developed with a high-gain Leak Detector to produce an effective and useful multi-purpose instrument. Designed specifically for Municipalities and Water Companies, the LC-5T assures pin-point detection of pipes, cables, mains and laterals and becomes a sensitive detector for water leaks simply by plugging in a crystal, rubber-encased microphone. Additionally, by a simple manipulation the new "Dualtronic" will pin-point valves, risers, boxes, and manhole covers. Now with transistors the versatile LC-5T is lighter, more sensitive, easier to operate, and it requires only flashlight batteries . . . Write today for further details on the "Dualtronic" and other Utility detection instruments.

The GOLDAK Company, Inc.
Leading Electronic Manufacturers
1933
1544 W. Glenoaks Blvd.
Glendale 1, Calif.

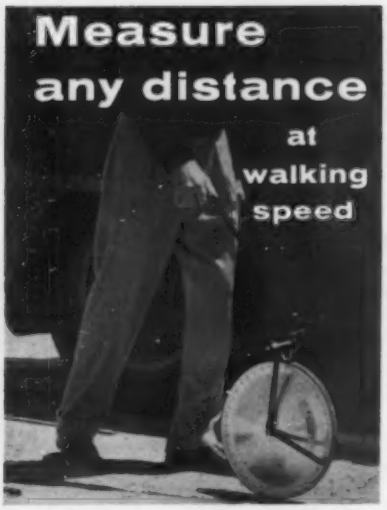
WORLD'S FINEST DETECTION EQUIPMENT MANUFACTURERS SINCE 1933

These "extras" make Sumpmaster cost less in the long run!

A heavy-duty, pre-engineered pump, BJ Sumpmaster has the "extras" in design and materials that save you money in the long run. High heads to 400 feet at low speed mean longer service, less wear and down time. Superior Meehanite castings used throughout—semi-open impellers are quickly adjustable for wear. Two-piece headshaft for ease of inspection and maintenance. Entirely self-contained for fast installation. High efficiency—non-overloading HP characteristics over the entire capacity range to 3500 gpm. Compact and self-priming, with choice of oil or self-lubricated shafting... packing or mechanical shaft seals. Sumpmaster is designed for rugged service in sump, circulating, cooling, booster and general industrial pumping applications—and it's now available from stock for *immediate delivery.*

BYRON JACKSON PUMPS, INC.
SUBSIDIARY OF BORG-WARNER CORPORATION
P.O. Box 70, Lawrenceburg, Indiana
P.O. Box 2017-A, Terminal Annex, Los Angeles 54, California

BYRON JACKSON B-W



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automatically!

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Records Feet automatically and the accumulated total is always in full view.

Shows Inches, and Fractions of an inch. Wheel is calibrated in inches and fractions for quick easy reading.

Shows Tenths of a foot. Wheel is calibrated in tenths on reverse side for engineers.

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Rolatape, Inc., 1741 14th St., Santa Monica 2, California

There is a variety of Rolatape Models to suit your needs. See them at your local dealers.

Rolatape
Measuring Wheels

About People

(Continued from page 268)

ton Upper Falls, Mass.; Rockwood Sprinkler division at Worcester, Mass.; Eagle Signal Co. division at Moline, Ill., and Hagen Mfg. Co. division at Baraboo, Wis.

The promotion of Melvin B. Gorton to the position of Pittsburgh district sales manager for **Rockwell Manufacturing Company's** municipal and utility division has been announced by C. K. Madison, vice president. Mr. Gorton will be responsible for the sale of water meters and parking meters in the Ohio, Pennsylvania, Virginia, West Virginia, Delaware and Maryland areas.

Melvin Gorton

Newark Brush Co., Kenilworth, N. J., has named Burr Williamson assistant sales manager for both Industrial Brush and Danlines sales. The company has also appointed Gerard J. (Jerry) McLane to its sales staff. He will handle sales for both Danline and Industrial Products Division of the company in the New York Metropolitan area.

Burr Williamson

W. W. Gould has been promoted to nickel-iron battery market manager of Exide's Industrial Marketing Division, national sales and service arm of **The Electric Storage Battery Company's** Exide Industrial Division and the Nickel-Alkaline Battery Division. Prior to his appointment, Mr. Gould was Chicago district manager for the Nickel-Alkaline division.

W. W. Gould

Ronald J. Harvey has been named manager of manufacturing and engineering and T. I. Martin has been appointed sales manager of the Hydropaka Division of the **Marion Metal Products Company.** Both positions are newly created.

Clinton L. Bogert Engineers, which maintains offices in New York City, Hackensack, N. J. and South Norwalk, Conn., announces that although Clinton L. Bogert has retired he will act as consultant to the firm. Remaining partners are Ivan L. Bogert, Robert A. Lincoln, Charles A. Manganaro and William Martin.

L. J. Frick has been appointed to the new position of manager, Industrial equipment Division sales, Midwest region, **Allis-Chalmers Industries Group.**

Hersey-Sparling Meter Co., Hersey Products Division, Dedham, Mass., has appointed John M. Kruzelock to its Chicago Branch sales staff.

Don A. McAllister is now industrial tractor and equipment sales representative of **International Harvester Company's** Farm Equipment Division.

Paul H. Tufts, Ridgewood, N. J., has been named sales manager of the Industrial Division of **Cloroben Chemical Corporation,** South Kearny, N. J., a wholly-owned subsidiary of Standard Chlorine Chemical Company, Inc., according to an announcement from H. Everett Smith, executive vice president of the parent organization. Mr. Tufts will also hold the post of assistant to the executive vice president of the parent company and a similar position in Standard Naphthaline Products Co., Inc., another wholly-owned subsidiary.

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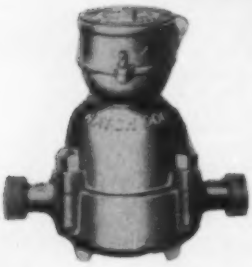

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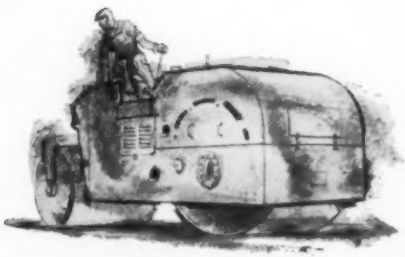

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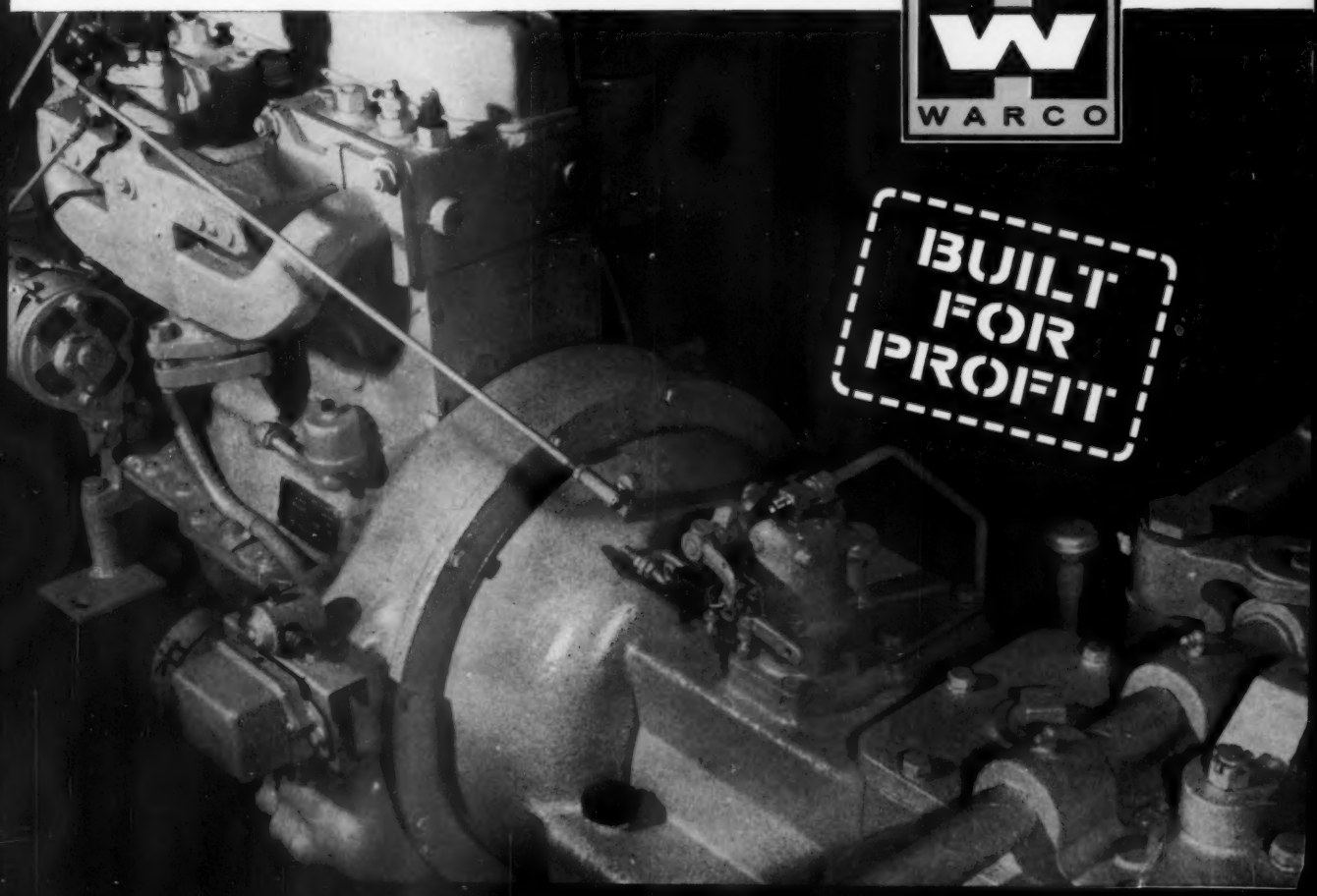

Michigan Tractor Shovel the key machine

Eastern city perfects unique system for clearing snow from wide streets

At Newburgh, New York, a new system of snow clearance is paying big dividends in taxpayer satisfaction.

Tried and perfected during the record snowstorms of the past two years, the system has solved the problem of efficiently clearing the City's extremely wide main street.

"For the first time," reports Newburgh's Director of Public Works W. G. McEvilly, "we're getting widespread compliments, instead of criticisms, on our snow control."

Push snow to center of street

Under Mr. McEvilly's plan, plowing starts as soon as snow accumulates two inches deep. The 1½ miles of wide main street come first. Speed and mobility of the machine used later for clearing—a Model 125A Michigan Tractor Shovel—enables grader and truck plows to push the snow *to the center* of the 90 ft wide pavement. All lanes are thus cleared quickly for traffic, cars can park normally, and plows push smaller loads than customary. Then, while the trucks and graders plow the other 60 miles of City streets, Newburgh's Michigan moves onto the main highway.

Michigan clears intersections

Working first at each intersection, the 127 hp Michigan quickly pushes the snow into a huge pile (see photo below). In two hours or less, all 15 intersections are clear, and cross-traffic can move freely while the 2¼ yd Michigan then bucket-loads the piled snow. Typical 12 to 14 yard trucks are heaped in 6 passes each. Load time for each truck, about 3 minutes.

Slush is bucket-loaded, snow is blown into trucks

As soon as this piled snow is removed, the Michigan goes to work on the windrows in mid-block. This accumulation too is truck-loaded . . . by bucket when the snow is slushy . . . by quick-mount blower under ordinary conditions. Prime advantages of the blower are *heavier truckloads*—blower chops the snow to eliminate voids . . . and *speed*—with it, the Michigan loads a 14 yard truck in half the time as with bucket, 60 to 90 seconds!

All this work has never taken any longer per snowstorm than three round-the-clock 8-hour shifts! The City's 10 parking lots go almost as fast . . . the Michigan here not only truck-loads the snow by bucket or blower, but often plows and piles it. Efficiency? Counting *all* jobs since purchase in 1958—working 8 hours most days, 5½ days a week *year-round*, plus round-the-clock in snow emergencies—*the Michigan has not lost one single hour of assigned work time!*

Michigan is a registered trademark of
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